MEDICAL RECORD

A National Review of Medicine and Surgery, Established 1843

VOL. 155, No. 11 JULY 1942 WHOLE No. 2714

Health of Munition Workers

In war the production of munitions calls for the labor of an immense number of workers and it goes without saying that their health is of great importance. They may be regarded in two ways, as human beings or merely as productive agents, human machines. Men and women, however, are not machines and should not be treated as such. Several factors are involved in the welfare of workers, such as satisfactory working hours, wages, and conditions outside the factory, as housing and transportation. Good ventilation, lighting, and heating or cooling are factors not to be neglected. Effective measures must be taken to prevent accidents, especially in processes in which explosives are involved, and poisoning in various forms must be prevented.

Labor continued throughout the entire week, Sunday included, from evidence gathered during the last war and this war as well, appears not to be economical as regards output and is dangerous to health; occasional holidays are advisable. As for hours of work, the problem is not simple. Circumstances must be considered. Long hours may be justified for highly skilled workers, but for the rank and file of workers it seems that such is not the case. Indeed, it is stated authoritatively that in many instances not only the hourly but the total output rises with shorter hours. Fatigue resulting from long hours also reduces output and thus rest pauses are desirable. In some cases a break of five minutes every hour has been found to answer the purpose.

An adequate diet is essential and canteens for workers should be provided. Proper lighting is a *sine qua non* and the vision of workers on fine tasks should be examined. It is asserted that in these cases glasses may be desirable even when vision is good. Temperature exerts a great deal of influence on efficiency and the air should be moving if it is moist. It is said that the best temperatures range from 65° F. for very light work to 55° F. for very heavy work. Humidity should not exceed seventy percent. Ventilation should be at least one thousand cubic feet per person per hour and when dangerous dust or vapors are produced should be removed by local exhaust ventilation. Careful supervision is necessary to prevent accidents.

Accident prone workers should be transferred to safer jobs, as accident proneness seems to be incurable. Thus the keeping of accident records is an esential factor in prevention. It is obvious that sickness, fatigue and insufficient sleep are causes of many accidents. Efficient medical service can do much in this direction.

It seems clear that one of the chief dangers to the health and efficiency of munition workers is overwork and trying to stimulate workers to increased output by feverish activity is worse than useless. Another danger is the sacrifice of ventilation and lighting to the blackout. The result will be a greater incidence of air-borne diseases varying from ordinary colds to cerebrospinal meningitis. Therefore, good ventilation in homes should be provided as far as is possible, and in places of work and transport vehicles, insisted upon.

Lastly, it should be borne in mind that tuberculosis is associated intimately with social, economic and industrial conditions. In total war all these conditions are adversely affected, in all the European spheres of war at any rate. It, therefore, behooves those responsible for the direction and management of war factories in this community to see that they are conducted in a manner conducive to the good health of the workers.

Tuberculosis in War

Tuberculosis in relation to war was tested in a colossal way during the last war and is again being tested, even more among civilians than in the first world war, as this present war is being waged as energetically against the general population as against soldiers. Of course, the resisting power of the population was weakened by food shortage during the war of 1914-18 and similar conditions are present now and it seems will be accentuated. Again, it must be borne in mind that the conditions which bring into activity the germ of tuberculosis must be considered and fought against. Inadequate feeding, less food of a nourishing and protective nature, the more hurried and strenuous mode of life and last, but not least, mental strain and anxiety, all tend to encourage the powers of evil, that is, of disease, to raise their heads, and there is no disease so likely to be prejudicially affected by these circumstances as is tuberculosis, especially the pulmonary type.

The healthy human body is considered to be rela-

tively immune from infection by the bacillus of tuberculosis, but this is merely conjecture, not a proved fact. At any rate, it may be said that some seventy or eighty percent of all adult cadavers examined carefully in western countries show lesions due to the tuberculous bacillus. It has been said, too, and it does not seem to be an altogether haphazard statement, that one-seventh of the entire human race dies as the direct and indirect result of tuberculosis. Bad economic conditions linked with inherited tissue susceptibility increase liability to the contraction of the disease and such conditions are necessarily prevalent in countries at war. As in most diseases, the motto nowadays is prevention.

In the warring countries every effort must be made to prevent the spread of tuberculosis, and this can be achieved only by the careful examination of recruits by competent physicians who will weed out those deemed dangerous to themselves and particularly to those with whom they came into contact. War conditions foster and bring out the weak points of those in whom the strain of the disease exists, or who may be classed as susceptible, and it is in the interests of all that these should be examined carefully.

Trachoma

There are repeated reports that German soldiers at the Russian front are increasingly menaced by trachoma. This contagious and dangerous granular conjunctivitis is widespread in Russia where it was introduced by the Mongols.

Napoleon's expedition into Egypt resulted in the infection of the French army, then of the English army, and finally of the whole of Europe during the first half of the nineteenth century. Napoleon's leading army physicians, Larrey and Desgenettes, believed that the disease was due to the strong reflection of the sun's rays by the white sand and to the large quantities of rough sand raised by the wind, as well as to the rapid changes in temperature, from the glowing heat of day to the damp, cold nights. The treatment of these eye inflammations consisted chiefly in the employment of antiphlogistic remedies, the application of leeches, and of bleeding. Certain ophthalmic ointments and scarification of the eyelids were also in use. Mainly those soldiers of Napoleon's army became blind who intrusted themselves to the native charlatans. During Napoleon's retreat from Moscow ophthalmias also appeared which the physicians attributed to the dazzling snow fields and the smoke of the nocturnal coal fires, which, at least in part, were also causes of trachoma.

Trachoma was known to the Egyptians some five thousand years ago. Our first knowledge of the disease came from the basin of the Mediterranean, the Near East, and other parts of Asia. Hippocrates treated trachoma with copper acetate and by scraping. The Crusades brought to Europe the germ of trachoma; many warriors of the crusading army of St. Louis had returned home blind. One of the victims in those centuries is said to have been Saint Francis of Assisi who was infected during his visit to Egypt and Palestine and who died almost blind in 1226.

The origin of trachoma in the tropical countries always raised the suspicion of a connection with the sun's glare, the dust or the flies. However, the rapid spread of the disease in Russia, Poland and Hungary made his explanation scarcely plausible.

Trachoma is frequently found among American Indians. Experts estimate the number of persons in the world affected with trachoma at a hundred million.

United States Army and Yellow Fever

Immunization of all Army personnel against yellow fever was ordered on February 12th by the War Department. This is an extension of vaccination started a year ago when Secretary of War Henry L. Stimson announced that the Surgeon General of the Army had been directed to vaccinate all soldiers stationed in the tropical regions of the Western Hemisphere, including Panama and Puerto Rico. The outbreak of war, which meant that troops might have to be sent anywhere on short notice, without time for vaccinations if they were destined to go to yellow fever regions, led to the decision to vaccinate the entire army as part of the general plan to protect it as far as possible against any disease that might be encountered anywhere.

Immunization of the U. S. Army will be the first large scale vaccinations against yellow fever ever attempted by a military force. Immunization is accomplished by the subcutaneous injection of 0.5 cc. of diluted yellow fever vaccine. Only one injection is required. Yellow fever vaccine used by the Army consists of a special strain of attenuated virus developed through prolonged cultivation in tissue cultures. The material is placed in ampules and is then rapidly frozen, desiccated, sealed and kept in the frozen state until used.

The yellow fever vaccine now being used is prepared in the laboratories of the International Health Division of the Rockefeller Foundation, New York City. Protective vaccination given soldiers will grant immunity against "jungle yellow fever", which in 1932 was discovered to have its reservoir in jungle wild life. Yellow fever at present exists in South America and Africa, but because of extensive plane travel these days, there is danger of its spreading swiftly to India and the South Sea Islands. To fight this danger, the quarantine supervision of plane travelers and the disinfection of planes from yellow fever areas are being practiced.

Papers and Addresses

PLASMA AND RED BLOOD CELL BANKS FOR THE SMALL INSTITUTION

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The therapeutics of blood have advanced rapidly in the recent war years. But the small institution, with its limited facilities, has found it difficult to apply this new knowledge. The development of the dextrose-saline-citrate preservatives has opened a new vista. Blood now can be stored for over twenty-one days and can be safely transfused (1). First to evolve was the plasma bank. The expensive centrifuge technique was no longer necessary. The cells could settle by gravity with an optimum plasma yield in seventeen days. The second development was the use of the remaining concentrated red blood cells. Experimental proof showed that the red blood cells stored up to eighteen days in the standard glucose-saline-citrate solution survive in the recipient as long as do fresh blood cells (2). Clinically, the concentrated cells were more satisfactory than the fresh whole blood where the metabolism of oxygen and iron were concerned (3). This means that the blood bank and its various ramifications are available to the small hospital—plasma for the primary emergencies, red blood cells for the secondary emergencies, and both for balanced blood therapeutics.

The practical phase concerns equipment that is simple, inexpensive, yet effective. The Baxter vacuum flasks have answered our needs (4). These rubber-capped, self-sealing, sterile, vacuum flasks are obtainable in various sizes, containing, for the most part, the necessary preservative solutions. The only other equipment needed for the bank is refrigeration space, a special valve to control blood flow, needles, air filter, and a stainless steel filter drip. The entire system is a closed one. The initial financial outlay for our bank was less than twenty-five dollars.

Plasma is the primary object of the small bank (5). This biological fluid has long since risen from its original emergency status to that of an essential therapeutic agent. Shock, burns, hypoproteinemia, cerebral edema, infection, hemorrhagic diseases, hepatic diseases, nephrosis, and hemorrhagic states of the gastrointestinal tract, all are indications for its use. With certain exceptions plasma is a substitute for whole blood. Yet in many instances it is superior. In burns, shock, nephrosis, and intestinal obstruction plasma should always be used. Furthermore, plasma is easily stored, always ready for use, needs no typing or cross-matching, and may be given intravenously, intramuscularly, or subcutaneously. Liquid plasma stored at 4° C. at the end of fifty days still has about sixty percent of its antihemorrhagic properties (prothrombin) and satisfactory amounts of antibodies (if present originally in donor's blood) (6). The maximum storage period is at least two years and probably indefinitely.

Undiluted plasma is necessary for cerebral edema and the very low protein states. Diluted plasma is as satisfactory for most other conditions and better for many. For example, in shock, any required amount may be given; it can be given more rapidly, and it supplies the needed fluid and electrolytes as well as blood proteins. This factor influences the preparation of the plasma. Alsever and Ainslie have developed a glucose-saline-citrate preservative for the preparation of dilute plasma which gives the maximum protein yield per volume of blood (7). This solution (five hundred cc.) is obtained in the one thousand cc. vacuum flask for withdrawal of five hundred cc. of whole blood. The alternate method for preparing undiluted plasma is to use the six hundred cc. centrivac which contains 70 cc. of 2.5 percent of sodium citrate. This tall narrow flask is preferable to the squat shaped transfusovac. Four hundred and thirty to fifty cc. of blood is drawn and fifty cc. of twenty-five percent glucose added (Russum, 8). As this type of glucose is not available in small vials, twenty-five cc. of fifty percent glucose has been used satisfactorily.

The addition of glucose not only increases the plasma yield but also the life of the red blood cells. Thus, we have available concentrated red blood cells to round out the therapeutics when the metabolism of oxygen and iron is necessary. The plasma is usually drawn off in an empty vacuum flask about the seventeenth day. However, this may vary with the need and the plasma may be drawn off sooner if the optimum yield is not essential. The remaining red blood cells may be transfused up to thirty days (optimum twenty-one days). The gross hemolysis will serve as a guide to usage. These concentrated red blood cells have proven themselves superior to whole blood in many ways because: one half the volume is necessary; the reactions are fewer; the cells may be given more rapidly; there is less danger in the usage of universal blood (9). The clinical response has been remarkable. In the anemias, preoperative and postoperative conditions, chronic diseases in which plasma is used during the acute phase, and sulfonamide reactions, all the patients respond quickly and are sustained with the concentrated red blood cells.

Volunteer blood donors are usually necessary to start the embryo bank. Thereafter, replacements from the recipients' families will keep the supply slightly higher than the withdrawals. A short clinical history is taken to rule out allergy, lues, and other blood-borne diseases. Donors who have not given blood within seven weeks are preferred (10). If clear plasma is desired the donor should not have eaten for at least three or four hours. On completion of the withdrawals, the blood remaining in the aspirating set is collected for

typing and serology. The serum may be sent to another laboratory for check on one of the more simple, rapid tests, such as the Kline or McLaughlin. The Lederle powdered rabbit serum is the most practical method of blood typing. The test may be read in thirty seconds, the powder is stable and we get at least fifty tests from the twenty-five test sets.

It is worth remembering that several experimenters have shown that citrated blood refrigerated at blood bank temperatures (4° C.) for seventy-two hours or longer will not transmit syphilis (11). None of our blood is stored less than seventy-two hours before use.

The donor ready, the best arm vein chosen, the skin cleaned and the tourniquet applied, the needle is inserted, the valve opened, and the blood is withdrawn. A sphygmomanometer cuff inflated to fifty mm. is a satisfactory cuff. One percent procaine may be used for skin anesthesia since fifteen gauge needles are usually used.

After the blood is drawn into the vacuum flask and the valve removed, the rubber seals itself, still retaining a partial vacuum. These flasks properly labeled are set in a refrigerator at 4° to 6° C. Small tubes of serum and cells for cross-matching may be attached to the sides. The red blood cells are allowed to settle for seventeen days after which time the plasma is drawn with the same valve into an empty vacuum flask. A blunt six inch needle replaces the donor needle. One percent merthiolate, one cc. per one hundred cc., is added. If need for the plasma of red blood cells arises within this time, the plasma may be drawn off sooner with only a slight loss in yield. If circumstances should warrant, inverting and shaking the flask reconverts to whole blood. The administration of any of the abovementioned preparations is done from their respective flasks. A special glass and stainless steel filter-drip removes any of the precipitated fibrin. Thus the preparation, storage and administration of plasma, concentrated red blood cells, or whole blood is accomplished with the same equipment.

Summary

There is presented a practical approach to blood therapeutics for the small hospital. Liquid plasma, dilute or undiluted, concentrated red blood cells, or whole blood may be had for individualized therapeutics. This is based on the preservative qualities of glucose and the closed system of the vacuum flasks.

References

1. DEGOWIN, E. L.; Transfusion of blood and blood substitutes. *J.A.M.A.* 117:2094 (Dec. 13) 1942.
2. MOLLISON, P. L., and YOUNG, I. M.: *Survival of transfused erythrocytes of stored blood. Lancet* 2:420 (Oct. 5) 1940.
3. SEMOFF, M.: The red blood cells of the plasma bank. Read before the Chattanooga-Hamilton County Medical Society, March 26, 1942.
4. ELLIOT, J., TATUM, W. L., and BUSBY, C. F.: Blood plasma. *Military Surg.* 88:119 (Feb.) 1941.
5. SEMOFF, M.: Formation and use of plasma. *Jour. Tenn. Med. Assn.* 35:1 (Jan.) 1942.
6. STRUMIA, M. M., and MCGRAW, J. J.: Blood plasma: its place in the practice of medicine. *J.A.M.A.* 118:427 (Feb. 7) 1942.
7. ALSEVER, J. B., and AINSLIE, R. B.: A new method for the preparation of dilute blood plasma and the operation of a complete transfusion service. *New York State Jour. Med.* 41:126 (Jan. 15) 1941.
8. RUSSUM, B. C.: Operation of a blood bank. *Neb. State Med. Jour.* 26:318 (Sept.) 1941.
9. MACQUAIDE, D. G. H., and MOLLISON, P. L.: Treatment of anemia by transfusion of concentrated suspensions of red cells. *British Med. Jour.* 2:555 (Oct. 26) 1940.
10. FOWLER, W. M., and BARER, A.: Rate of hemoglobin regeneration in blood donors. *J.A.M.A.* 118:421 (Feb. 7) 1942.
11. TURNER, T. B., and DISEKER, I. H.: Duration of infectivity of Treponema pallidum in citrated blood stored under conditions obtaining in blood banks. *Bull. Johns Hopkins Hosp.* 68:369 (March) 1941.

TREATMENT OF FEMORAL SHAFT FRACTURES IN INFANTS

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Treatment of fractures of the femoral shaft in infants presents certain special problems. The most important of these is the necessity for securing alignment of the fragments by flexion of the thigh on the trunk. This has been accomplished most readily by the gallows or overhead type of traction used in routine hospital practice. Occasionally hospitalization cannot be instituted and in other cases it may not be expedient, so that the overhead traction method can only be applied at home, with great difficulty.

In the first case in which the present method was used, hospitalization could not be instituted, because the wards were quarantined. In another case the cost of the additional hospitalization was prohibitive to the parents, who were in straightened financial circumstances. Besides these, the problem of nursing, especially where the mother must travel long distances, offers serious objections to hospitalization. While these are not valid medical contraindications, they represent factors which cannot be overlooked in practice, however much they may be neglected in theoretical texts.

The apparatus is extremely simple to apply and consists of a plaster of paris trunk piece, in which an iron for traction is incorporated. The chest, shoulders and iliac crests are meticulously protected against the likelihood of pressure sores by the careful insertion of felt padding. A typical plaster of paris bandage, with shoulder straps, is applied to the trunk and is carefully moulded around the iliac crests. When the plaster has properly set, a sufficiently long piece of half-round cold rolled iron, one-eighth by one-half inch, is bent into appropriate shape (Fig. 1) and is covered with a plaster of paris bandage. Adhesive stickers are applied to the extremity and a wooden spreader is inserted. Elastic traction either by rubber bands or rubber tubing, is then applied. By means of adhesive tabs applied to the stickers and carried across to the opposite side, internal or external rotation may be accomplished (1).

No lengthy discussion of this procedure is necessary beyond the statement that it has served its purpose

efficiently. It has obviated the period of hospitalization with all the inconveniences attendant upon this. It has permitted adequate care of the child and efficient reduction and immobolization of the injured extremity.

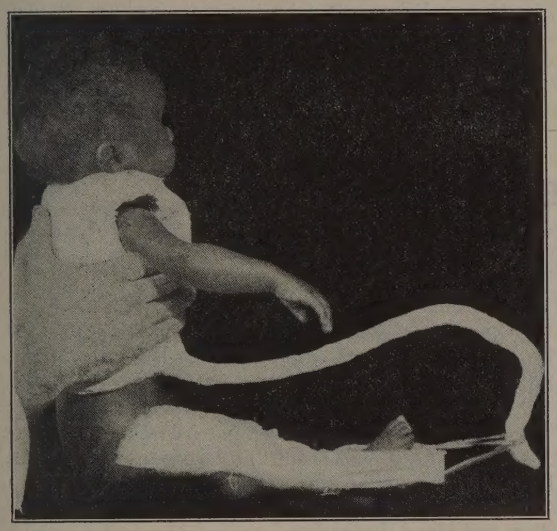

FIG. 1.—Shows method of application of plaster jacket, incorporation of steel bar, with elastic traction.

Case Histories

CASE I.—S. B., female, aged five months, colored, was first seen on March 10, 1937. The mother stated that she had noted a "swelling of the right thigh this morning". She stated that there had been no history of injury. This history was considered questionable, because it was apparent that the child had suffered a fracture of the end shaft of the right femur. The mother was advised to admit the child to the hospital for treatment. This, however, was impossible, because of a contagious disease quarantine which had been imposed on the wards. The only alternative to sending the patient to another hospital, was the adaptation of a body-banjo splint, which had previously been used in the treatment of an infectious synovitis of the hip. This was applied with complete satisfaction. The x ray, taken on April 16, 1937, was reported as showing "bony callus at the site of the fracture of the femur previously reported" (Fig. 2). At this time the apparatus was removed. The patient did not return for further observation.

FIG. 2.—Case I, Reduction; patient in traction apparatus.

CASE II.—J. M. C., female, aged three days, was seen in consultation on September 1, 1937. The patient, a breech presentation, suffered "a transverse fracture at the junction of the middle and upper thirds of the shaft of the femur". The problem which was presented was not primarily of medical, but of economic importance. The family, in straightened circumstances, was not able to keep the patient in the hospital beyond the ten day period included in a flat rate fee for the whole confinement. To meet this indication, the portable traction was applied with the thigh in flexion and the leg extended. The patient went home under the care of the general practitioner. X rays taken on October 7 showed "excellent alignment, with production of excess callus" (Fig. 3). The traction was removed and since then the patient has been symptom free.

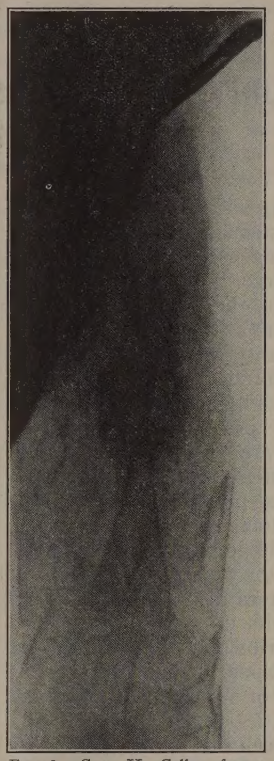

FIG. 3.—Case II. Callus formation, good alignment; traction apparatus in place.

FIG. 4.—Case III. Slight medial displacement, due to insufficient traction; general alignment and callus formation satisfactory.

CASE III.—I. G., male, aged ten months, was seen on July 6, 1938. The mother stated that while holding the child in her arms she had fallen down four or five steps on the day before her visit to the Out Patient Department. The x ray showed "a complete transverse fracture at the junction of the middle and distal thirds of the femur, associated with a slight posterior displacement of the distal fragment." An attempt to align this fracture by simple straight leg traction led to marked anterior displacement of the proximal fragment. The portable traction apparatus was applied with assumption of good general alignment. Check-up x ray, however, revealed the persistence of the posterior displacement previously noted. This was overcome with but slight difficulty, by simply increasing the elastic trac-

tion. Clinically, the relations of the fragments could readily be palpated and seemed to be satisfactory. This was confirmed by x ray taken on July 25, 1938, which showed that there was "good alignment of the fragments, with exuberant callus formation" (Fig. 4). The plaster was left on until August 10, 1938, after which it was removed. Check-up x ray on August 19, 1938 revealed no essential alteration from that noted about three weeks earlier. The following week the patient was permitted to stand. When seen in October 1938, the healing appeared to be solid and the patient was discharged.

References

1. MILCH, HENRY: Portable extremity traction for children. *Journal of Bone and Joint Surgery*, 19, October 1937, p. 1134.

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PRURITUS: ITS CAUSE AND TREATMENT

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Itching is a common symptom in medicine, and frequently is a symptom of systemic disease. Many common dermatoses have itching as the important subjective sign, which varies according to the nature of the cutaneous entity, its site, the cause of the symptoms, and the psychic makeup of the individual. "Itching represents a sensory quality identical with that of protopathic pain (1)". About two hundred years ago Haffenreffer (2) stated that "itching is an unpleasant cutaneous sensation which provokes the desire to scratch". Most physicians are well acquainted with the essential points in the differential diagnosis of medical and surgical diseases that present themselves with pain as the cardinal symptom, and are well versed, from common usage, in the proper laboratory and diagnostic aids, e.g., x ray and the fluoroscope, blood and serum studies, and the electrocardiograph to "sift out" the essential diagnostic points in order to come to a correct diagnosis and prescribe the proper treatment "to relieve suffering and prolong life".

A tabulation is presented of a number of important cutaneous and medical entities which one must consider in the diagnostic approach to a patient presenting pruritus as the important subjective symptom. The entities are arranged in an order that is practical for easy consideration in a succinct diagnostic scheme, and in this short article I shall endeavor to detail as completely as possible the essential objective signs to consider in distinguishing these entities from each other; together with mention of the proper laboratory aids, and brief remarks on treatment.

On this list those conditions are placed first which present morphological changes in the skin and appendages, characteristic of cutaneous entities that are easily recognized by the dermatologist. Some cases of pruritus occur where no cutaneous lesions precede the itching, and in these cases certain abnormal metabolic disturbances may be responsible for the pruritus. The alert physician is therefore often in a position to make the diagnosis by means of a careful history, physical and blood examinations, and certain essential laboratory examinations.

It will be noted that in this tabulation the entities of exogenous origin are placed first; second, pruritic entities of possible endogenous origin; third, those entities that are dependent upon systemic disturbances for the origin and perpetuation of the itching; and finally, a brief discussion of important causes of localized or regional pruritus.

Pruritus Group

1. Parasitic causes: scabies, pediculosis, and fungi: ringworm, yeasts (Monilia), and trichophytids-monilids
2. Eczema
3. Urticaria: acute and chronic (dermatographism)
4. Papulosquamous group: pityriasis rosea, psoriasis, lichen planus, and seborrheic dermatitis
5. Constitutional causes: diabetes, nephritis, jaundice, and blood dyscrasias
6. Pruritus hiemalis—bath pruritus
7. Senile pruritus
8. Dermatitis herpetiformis (Duhring's disease)
9. Lymphoblastomas: leukemias and leukemids, pseudoleukemia (Hodgkin's disease), mycosis fungoides, and lymphosarcoma
10. Cutaneous neuroses: neurotic excoriations and dermatitis artefacta (factitious or feigned eruption)
11. Localized pruritus: ani and vulvæ

Parasitic Skin Diseases

The parasitic invasions of the skin exhibit characteristic cutaneous lesions, and may occur in people in all walks of life since the Acarus scabiei and pediculi are no respector of persons.

Scabies.—This is an eruption of the skin of rather frequent occurrence, and is commonly called "seven year itch". It is characterized by nocturnal itching and the occurrence of erythematous papules often surmounted by edematous crusts, and the associated presence of burrows that represent the course of the female parasite, with deposition of her eggs in the skin. These burrows are most commonly seen in the webs of the fingers, about the breasts in the female, about the umbilicus, and on the corona penis. Careful removal of the top of the vesicle at the end of a burrow will often reveal the acarus when the fragment of skin is examined under the low power of the microscope. In the adult, the face and scalp are rarely involved; in babies and young children, the palms and soles may be involved.

The diagnosis of scabies is comparatively easy in the presence of the characteristic lesions, just described, with an associated history of contagion and involvement of other members of the family, nocturnal exacerbation of the itching, and its beneficial response to sulphur therapy.

In the treatment of a family infected with scabies, it is essential that all members of the family be treated

at the same time. Sulphur is the common remedial agent and may be used in various forms, but I prefer the socalled twenty-four hour treatment with Danish ointment described by Greenwood (3a). The Danish ointment is a complex formula that is hard to prepare, and since it can be procured in proprietary form (3b) it can be readily secured for use by all in any community. After a warm bath, at which time all affected areas are rubbed briskly with a well lathered wash cloth, the body is dried and then anointed with Danish ointment from the chin to the ankles, with an extra "rubbing in" over affected areas. The ointment is allowed to remain on the skin for twenty-four hours, then another bath is taken, as before, and if, as occasionally happens, itching is present as the result of sulphur dermatitis in sensitive individuals, a soothing lotion like calamine lotion (N. F.) is applied.

Pediculosis.—Since this parasite lives in the clothing, all clothing must be removed and sterilized by steam or heat in the process of laundering. The patient should take a warm bath during which he has had a thorough scrubbing with soap and water, and after carefully drying the skin, it is well to rub into the body a 1:1000 bichloride of mercury solution. The use of this solution can be continued night and morning for a couple of days to make certain that all parasites are destroyed.

Yeast infections.—These infections of the skin are common in those areas where the cutaneous surfaces are in apposition, such as in the inframammary areas, the creases in the pendulous folds of the abdomen of obese individuals, in the groin, and occasionally in the axillæ. When a person in middle life presents a pruritic, markedly inflammatory eruption in the inframammary areas, the possibility of diabetes in the patient must always be considered, and it is important to rule out glycosuria and hyperglycemia. In the absence of diabetes, such involved areas respond well to drying lotions, such as calamine lotion (N. F.), and the use of bland dusting powders. Resistant areas may be painted with three percent aqueous solution of gentian violet each morning and a lotion or powder used at night.

Ringworm.—The ringworm infections of the feet (athlete's foot) usually present themselves as an intertriginous involvement between the toes, a hyperkeratoic or vesicular eruption on the soles, and in the vesicular type there may be considerable pruritus of the affected regions. Deep vesicles of a "sago grain" type may appear upon the palms (trichophytids), and these lesions may be intensely pruritic. In this type of involvement it is essential first to clean up the infection on the affected feet by wet dressings of potassium permanganate solution of 1:3 or 5:000 dilution, together with fractional x ray followed by the use of a fungicidal powder and ointment, e.g., Whitfield's ointment (N. F.) or one containing oxyquinoline benzoate. Large vesicles or bullæ should be opened under antiseptic conditions, and the parts then soaked in permanganate solution.

Eczema

Eczema (4) is a term most often used by both physicians and laymen in referring to any nondescript, superficial, noninfectious, inflammatory, itching eruption. The concept of eczema varies with the individual dermatologist or practitioner, and the present tendency is to exclude all forms of dermatitis which have a definite cause. With improvements in etiological research, and investigative methods in obscure dermatoses, the large group of eruptions previously included under this heading has been greatly restricted. The term eczema, in a strictly limited sense, has been used to describe general or localized patches of dermatitis of unknown etiology. When the exciting factor becomes known it is called dermatitis with the addition of a qualifying adjective to indicate its etiology. In the old conception of eczema a large number of cases of dermatitis due to contact with various irritants was included, and this group has been narrowed down in the light of fruitful investigation in industry (5a, 5b) and in the causal irritants in ordinary household contacts, and even the irritant action of soaps. Many eczemas have been found to be dependent upon allergic causes such as fungi, bacteria, metabolic products or certain foods.

From the discussion thus far, implying a complex etiology for eczema, it is obvious that the management of eczema frequently taxes the therapeutic resourcefulness of the practitioner, and that all possible exogenous (6) causes be first ruled out, and then avoided; and bland soothing methods of treatment used. With exacerbations that bear a definite time relation to irritant contacts or the ingestion of certain known offending foods and allergic investigation, or elimination diets (8), revealing specific sensitivity to articles in the patient's diet, it is well to interdict the use of these foods preparatory to or in conjunction with local therapy. In acute eczema the use of soothing lotions and bland ointments are indicated, to be followed by ointments containing ichthyol, naftalan; or washed crude coal tar combined with zinc oxide, corn starch and vaseline (White).

Urticaria

Urticaria is a common dermatosis characterized by the presence of wheals, pruritus or "hives" as the sole primary signs. The lesions develop rapidly to a variable intensity, are associated with pruritus, and may rapidly regress, leaving no visible marks in the acute type. The lesions may appear on any part of the body. Many of us are acquainted with that type of giant urticaria involving the lips and mucous membranes of mouth and throat, where breathing becomes difficult and we were wary of the patient's welfare before the swelling subsided. In the acute types there is frequently a history of previous ingestion of unusual foods e.g., shell fish and sea food, or strawberries, or the ingestion of some article of diet to which the patient, from previous experience, has been known to be sensitive. Drug ingestion (7) may also be a factor. In these cases withdrawal of the drug, local soothing therapy, starch baths, alkalies, and a mild laxative together with calcium or sodium thiosulphate by intravenous injection are often helpful in shortening the period of the acute attack.

Chronic urticaria is a much more formidable therapeutic problem. It is wise to forbid the use of alcoholic beverages, check carefully the injection of all drugs (7), e.g., aspirin, and try to establish a "time relation" between the ingestion of commonly known offending foods and the appearance of the eruption. In protracted cases the use of elimination diets (8) may be of value. The factor of emotional tension (9) must also be considered, and in these cases the use of calcium gluconate by injection or per os, or the use of autohemotherapy can be considered.

Papulosquamous Group

This group includes that large number of dermatoses in which the eruptions are characterized by papules and associated scaling, and where itching is a variable feature.

Pityriasis rosea.—The clinical picture of pityriasis rosea is characteristic and well known by the onset of the "herald patch" and the occurrence of oval scaling lesions parallel with the lines of cleavage of the skin and with each other, and with the greatest involvement of the axillæ, and sides of the trunk. This is a non-contagious self-limited cutaneous disease in which soothing local applications, e.g., calamine lotion with one percent phenol is indicated, together with corn starch baths, and suberythema doses of ultraviolet light to shorten the course, and make the patient more comfortable.

Psoriasis.—The picture of psoriasis is well known and needs no further detailing here. The therapeutic response of this disease is still a variable one, and remains an important and difficult task for the physician. Its cause is still unknown, and time precludes a detailed discussion of the pro and con of the various new available therapeutic suggestions in this disease, and for this discussion refer to some of the newer texts on dermatology and dermatological therapy (10). Itching is variable in psoriasis and, as a rule, is not marked. The Grutz low fat diet has been advocated in this disease, and while it has given great benefit in some cases, the response in others has been quite variable.

Lichen planus.—This is a papular disease of the skin and mucous membrane in which smooth glistening angular papules, associated with more or less itching, occur on the flexor aspects of the wrists and forearm, and may be associated with generalized distribution of papules on the trunk. Its exact etiology is unknown, but the factor of an emotional strain or shock in its etiological relationship is one to be seriously considered. In treatment, mental and physical rest should be obtained, and x ray used over intensely pruritic areas or over the spine (11). Mercury with chalk or arsenic by mouth and one percent bichloride of mercury in normal saline, or mercury salicylate in oil, intramuscularly, may be used. Soothing antipruritic lotions should be used, as indicated.

Seborrheic dermatitis.—In this skin affection there is an inflammation dependent upon a constitutional condition. Seborrhea is characterized by excessive sebaceous activity and disturbance of fat metabolism. The parts affected are the socalled seborrheic areas where the oil glands are most numerous, e.g., the scalp, nasolabial region and mid portion of the chest. Itching of variable intensity may be associated with the cutaneous signs. The involved patches in this condition are greasy and scaly. The local treatment of this condition begins with proper care of the face, and scalp; shampooing and the use of a good soap. Sulphur and salicylic acid ointments are applied to the affected areas, the patient put on a low fat diet, and chocolate, nuts and starches avoided in the diet. Suberythema doses of ultraviolet light to the trunk and scalp are beneficial. Sulphur in lotion or ointment form is of value for topical applications. Vitamin B complex in capsule form per os is also beneficial.

Constitutional Causes

After having eliminated the entities just discussed as factors in the cause of itching in a patient in question, then it becomes necessary to rule out the constitutional causes that may contribute to itching, e.g., diabetes, nephritis, and jaundice, the latter being one of the common and very important causes of generalized pruritus. Here, however, the icteric tinge to the skin and scleræ will aid in the diagnosis of the cause and confirmation may be obtained by appropriate laboratory investigation for the icterus index, blood bilirubin values, and appropriate history and medical check-up as to the cause of the bile stasis. Soothing antipruritic applications such as bland ointments and lotions containing phenol, accompanied by appropriate treatment of the pathology in the gallbladder and liver, are indicated. If the cause of itching is still obscure, then it is essential to do a blood count to see if there is any alteration or increase in the white blood cells. This portion will be elaborated on later when the lymphoblastomas (12) are discussed.

Other Causes of Itching

Pruritus hiemalis or winter itch denotes that type of itch which affects certain individuals in the fall and winter months. The skin of these patients is usually dry, and in women, who bathe frequently, the incidence of this condition is closely linked up with bathing and may be due to the use of strongly scented soaps; in response to the skin health and beauty promises made them by certain "radio commentators". Except for general dryness of the skin, and occasional mild scaling, there may be no skin lesions with the exception of a few scratch marks over areas that have been recently irritated. The reduction of the frequency of bathing, and the use of linit corn starch, almond meal or bran in the bath is indicated, together with an unscented superfatted soap. If these simple measures do not suffice for relief, then one must consider the possibility of a deficiency of vitamin A being a contributory factor, and it is well to give the recalcitrant cases at least fifty thousand units of vitamin A daily. The use of local oily preparations, e.g., nivea skin oil rubbed on the body after bathing and on retiring, is also beneficial.

In the aged individual with a thin wrinkled skin and little subcutaneous fat, senile pruritus may occur and itching is frequently the commonest subjective symptom. General examination for contributory factors, e.g., arteriosclerosis, subthreshold uremic states, and prostatism must be looked for. The wearing of warm underclothing, and daily massage with an oily lotion, e.g., nivea oil, should be considered. Any constitutional conditions should be treated, and intractable cases sometimes respond to the use of the androgens (15) or may require a change to a warmer climate.

Dermatitis herpetiformis is a chronic recurrent cutaneous eruption associated with itching and characterized by the development of polymorphous lesions, papules, vesicles, bullæ and wheals which show a tendency to grouping, especially on the trunk. Itching is usually intense, and may be associated with stinging and burning sensations. The eruption is of chronic recurring character usually associated with eosinophilia

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Symposium on War Medicine and Public Health: II

MEDICAL RECORD

PUBLISHED MONTHLY BY

THE MEDICAL JOURNAL AND RECORD PUBLISHING CO., INC.

JULY 1942

INDUSTRIAL HEALTH IN WARTIME

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New York, N. Y.

It is estimated that there are now about ten million American workers engaged in the greatest production task ever undertaken by a nation for any purpose at any time in the history of the world, and plans call for at least ten million more.

Many of these persons will never have worked in a factory before. For them, and especially for the women among them, the physical and psychological adjustments to new surroundings and to new tasks will be difficult.

Even for men long accustomed to being a part of the dramatic American industrial scene, the strenuous days ahead will require optimum health and staying power if they are not to collapse under the extra load imposed by war. If they collapse, the nation's production program for victory collapses with them.

The challenge to medicine is great at this critical time. If estimates on the amount of time that may be lost from war work in 1942 because of illness and industrial accidents prove correct, industry will be deprived of enough man-hours to complete 7,200 flying fortresses.

What is being done to avoid this great loss? What is being done to safeguard the health and well-being of the American industrial worker today?

Industry and the medical profession have for many years sought to reduce the suffering and loss from illness and accidents among workers. Phenomenal progress has been made in the field of accident prevention by industrial physicians working in close cooperation with safety engineers, and, until thousands of green workers joined the ranks of the wartime industry army, the accident rate in industry was excellent in comparison with that in other public groups. Safety work is now being intensified among new workers. Under the direction of competent industrial physicians, hundreds of large companies throughout the country have instituted complete medical service programs within their plants.

Results of these two correlative programs have been most encouraging, as indicated by a recent survey conducted by the National Association of Manufacturers in a number of plants having medical and safety programs.

The companies with health programs surveyed reported a sixty-three percent reduction in occupational diseases, a forty-five percent reduction in accidents, and a thirty percent reduction in absenteeism.

Further evidence of the results of efforts to improve the health and safety of the industrial worker is reflected in figures released by the Metropolitan Life Insurance Company. A new record was achieved in 1941 by the sixteen and one-half million industrial-type policyholders of that company (and their families) when the mortality rate of this group reached a new low figure of 7.4 per thousand, more than two percent below the previous minimum. During the decade 1931-1941 the average length of life of this sample group increased by five and a half years and now stands at 63.42 years, an average length of life very nearly as great as that of the population as a whole.

Good as industry's health record is, further improvement may still be attained, indeed must be attained, if illness and accidents are not seriously to hinder our war production program.

The record of large industries in the matter of industrial health has been good. For the most part, it is in the small plants where the big lag in attention to industrial health has occurred.

A joint survey made by the Connecticut State Medical Society and the Manufacturers Association of Connecticut shows that, among the one hundred and twenty plants answering the inquiry, there were no full-time doctors in any of those plants which employed between five hundred and one thousand workers. In other words, there were no doctors available in the plant at all times in many of the socalled small plants.

Why is stress laid on the full-time feature? It is because many physicians still believe that industrial medicine is the same as ordinary medicine. Traditionally they believe that industrial surgery requires only a knowledge of hernias and traumata and that industrial preventive medicine requires only a knowledge of somatic conditions.

The practice of industrial medicine is a separate profession and one that requires special training if industry is to receive the benefits which it has the right to expect.

The education of the industrial physician today includes, in addition to his regular training as a doctor of medicine, such subjects as the engineering of venti-

lation, lighting, heating, and sanitation. He must have a knowledge of the ingredients and the toxic or disease-causing qualities of the materials and processes used in the industrial organization which he serves. He must have a knowledge of plant sanitation problems and their solution, of working conditions, of accident and occupational disease prevention methods, and of preventive health measures in general.

The modern industrial doctor should be competent in the diagnosis and treatment of occupational diseases and in the diagnosis and handling of traumatic lesions. He must be well versed in the procedure for follow-up and rehabilitation, and should have a working knowledge of an efficient medical record system and of statistical methods.

Small plants are concerning themselves with the problem of how to procure the services of a full-time doctor. Various plans have been suggested and a few have been tried. However, it is my opinion that we still lack enough experience to be dogmatic about any of them.

Several plans have been tried, including dividing the full time of a physician among a number of small plants and on a regular schedule; making use of the services offered by insurance companies and by private clinics; using State and County Medical Society plans; and using a central office where a full-time medical staff is maintained by a number of small plants which call upon it for service.

Essentials of a Good Health Plan

Whatever the plan adopted for the small plant, these first essentials of any good industrial health plan should be incorporated:

First, the selection of only qualified and experienced industrial physicians, assisted by competent, fully qualified nurses.

Second, a general organization plan mobilizing the resources of the plant under the man responsible for the health and safety of the workers.

Third, the provision of adequate dispensary and hospital facilities for industrial-type injuries.

Fourth, pre-placement and periodic examinations of all workers.

Fifth, health hazards must be controlled at their source and a program of accident prevention undertaken throughout the plant.

Sixth, basic first aid instruction and advice on the prevention of occupational diseases must be given at least to key workers, if not to all workers.

Seventh, adequate, confidential records must be kept—this is where many physicians seem to fall down.

Eighth, plant sanitation, ventilation, lighting, and heating must be scrupulously supervised.

Ninth, the industrial physician should make a point of cooperating ethically with the worker's family physician and of using approved local hospital facilities where available.

Tenth, the industrial physician should know the industrial compensation laws applying to his plant.

As a direct result of the added burden that the war has put on its employees, industry today is paying much attention to helping them to obtain correct information on what to eat and how to prepare it for lunch box and home table.

The dissemination of information about nutrition now being made to workers by industry, government, and private agencies holds forth very great promise. In this activity there is an unprecedented opportunity for the application of the preventive approach. The cumulative educational value of a widespread program of nutritional education cannot easily be estimated. Many maladies and conditions now common to industrial workers could be prevented by proper nutrition, and time lost from work could be saved to the benefit of all concerned.

Many plants provide cafeterias in the factory itself, with pleasant, quiet surroundings and assistance (when requested) in selecting a balanced diet.

Help is offered workers' wives in the selection and proper preparation of wholesome foods for home and lunch box in order to retain important food elements to the fullest degree.

One Eastern company engaged in important war work has converted its spacious showrooms, which in peacetime are furnished with complete kitchen equipment, into a classroom where workers' wives learn how to select proper foods and how to cook them to preserve food values. In the same city a public utility has similarly converted its peacetime salesroom to a wartime classroom, and the two companies have joined in providing an effective program of nutritional education for the public.

A sound health program undertaken today by any industrial plant, however large or small, is an investment in this country's future. It is encouraging to see such progress being made, and it is hoped that the conservation of manpower and womanpower throughout the nation will continue to be served by the extension and improvement of industrial medical programs.

ROLE OF BACTERIOLOGY IN WAR

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An army is victorious only if the good health of the soldiers is preserved; never has a general won a battle with an army whose health has been undermined. This is a truth demonstrated time and and time again in history.

Bacteriology occupies in war a very prominent place, second perhaps only to surgery. I shall analyze here a few aspects of the important rôle played by this science in the present conflict.

Identification of Bacteria

This work is carried out through successive steps, which may be summarized as follows: 1. Isolation in pure form of the specified strain. Study of form, motility, the presence of flagella, spores, conditions of growth under anaerobiotic conditions.

2. Culture on various media and characteristics of such growth, for example, growth on gelatin and at room temperature, characteristics of growth on agar

slant, bouillon, milk, potatoes, etc. These two steps are preliminary and involve only morphology.

3. Biochemical characteristics: (a) Proteolytic characters—growth on egg, serum, gelatin, milk, or on media containing amino acids. (b) Fermentation of carbohydrates—growth or media containing hexoses, pentoses, alcohols, polysaccharides. (c) Formation of catabolic products in cultures, such as indol, scatol, indolacetic acid, phenol, mercaptans, ammonia and the series of acids formed by the fermentation of carbohydrates.

4. Pathogenicity tests: These involve animal experimentation to reproduce the disease.

5. Seriological test: In this group are included the various reactions of agglutination, precipitation, complement fixation.

War Wounds

The greatest danger of war wounds is hemorrhage, which is out of the bacteriological field, if it did not predispose to infections. In Spain, during the Civil War, in many instances the tourniquet was applied to wounds of the extremities to stop hemorrhage and then forgotten, with the result that gangrene occurring in the ischemic area necessitated unnecessary amputation of the limb. In other instances, a man with a compound fracture of the femur and bleeding would be carried on the back of a mule through mountain trails to the nearest first aid station, reaching there in a state of shock, with both ends of the femur sticking out of the wound, and dripping blood along the road.

Wounds by rifle bullets are less dangerous. Wounds by artillery shells and bombs are the most favorable for the growth of anaerobic bacteria, because of vast lacerations of muscles, internal hematomas and penetration into the wound of pieces of cloth and dirt. The identification of the germ which is the causative agent may be of great aid in this selection and preparation of antisera, although at the present time polyvalent sera are available for immediate administration.

It must be borne in mind that bacteria are more abundant in humid soil and that gangrene is more frequent in winter than in summer, on account of the conditions of the soil, increased vitality of germs, and lack of cleanliness on the part of the soldiers. Soft soil is many times more dangerous than hard dry soil, and is also more difficult to remove from wounds, on account of its adhesive qualities. Also, during the wet season, contamination with excreta is apt to be more heavy.

Men now may be wounded while working on machinery or engaging in mechanical warfare. But, according to the experience of the Italians in Ethiopia and Spain and of the Germans in the various campaigns in Europe, oil and grease are not as septic as the dirt of the country and animal excreta. A war wound has characteristics which essentially relate to the particular countryside where the wound was inflicted, and the more humid the soil, the more polluted is the wound.

Problems of Sanitation

Many diseases may be carried by rats and lice, the intimate companions of men in war. Food may be heavily contaminated by rats carrying germs of epidemic diseases. Sometimes germs that have accidently penetrated into some warm food find the right conditions for development in transit from place of preparation to the place of combat, and, therefore, cause acute infections which could not have been forseen.

Water may be contaminated by dirt and animal excreta, or even by the presence of corpses at some points above the water supply. This problem is acute in the tropics, where water is scarce.

Of the various epidemics which may be spread among troops engaged in combat work, typhoid, cholera, smallpox, plague and typhus are perhaps the most dreaded. We must bear in mind that war may be carried out in areas of the world where many of these diseases are endemic and prophylactic facilities are primitive or nonexistent. Troops coming from areas of the world where these diseases are not endemic may be very susceptible to epidemics which develop among them without affecting the native populations.

Of course, we must not forget the case of carriers among the soldiers who may harbor germs of potential epidemics. This is particularly important where the danger of an epidemic spreading is somewhat enhanced by the duties performed by the carriers, such as kitchen work or similar occupations.

Armies and Epidemics

It has been stated that Napoleon was defeated by the Russians. More correctly we should say that Napoleon was defeated in Russia by typhus. At one time the effectives of the Grand Army were cut down to one-third by the number of typhus cases, which filled all the hospitals of Poland and even many of Germany.

Last winter, the Russians did not have typhus as their ally. The German army had a few cases of typhus, but the number was not at all comparable to the losses of Napoleon's army, and Hitler was therefore saved from complete collapse by the absence of a widespread epidemic. Whatever retreat Hitler has been forced to make must be attributed only to the courage and daring of the Soviet army.

Fighting in the tropics has always been accompanied by various diseases peculiar to the regions. It has been reported that in the conquest of Indo-China the French troops lost one out of every eight men from tropical disease. In the conquest of Madagascar one out of three Frenchmen died of disease alone. In the tropics the diseases which particularly attract the attention of the hygienist are malaria, smallpox, and tropical ulcers. To these must be added epidemic meningitis, influenza and recurrent fever. Although meningitis and influenza are not strictly tropical diseases, the experience during the Ethiopian campaign of 1935 shows that colonial troops are more susceptible than white troops to the two diseases.

In addition to this more important group of tropical diseases, mycoses, intestinal parasites and other protozoan infections may contribute to invalidate large bodies of troops. It must also be borne in mind that leprosy is widespread throughout all tropical countries and that many soldiers or bodies of troops may come into contact with foci of infection. Although the danger here is not of an immediate nature, still it is worth considering. Leprosy, according to more recent investigators, may be transmitted, not only by bedbugs, but by fleas as well. Such an unpleasant prospect must be faced and studied rather than shoved aside as a remote possibility.

Sanitation Measures

Sanitation may be effective even in the tropics, if well organized and methodically applied. After the Ethiopian campaign, Mussolini boasted and the International Press echoed, that victory was due to either superior arms or to brilliant strategy. These two factors, however, were secondary, and the press overlooked the medical problem entirely.

An American scientist, just before the Ethiopian campaign opened, predicted that the armies of Mussolini would be shattered, not by the Ethiopians, but by disease. He based his prediction upon the experiences of previous colonial wars. But the sanitary service of the army in Ethiopia was entrusted to Aldo Castellani, perhaps the greatest authority in tropical diseases. The war, in my opinion, was won by Castellani who was able to keep in good health white troops unaccustomed to the climate and colonial troops poorly educated in prophylactic measures. The Ethiopian armies were riddled with typhus, malaria, dysentery, smallpox, scurvy, recurrent fever and, therefore, unfit to offer any kind of resistance, whereas the Italian troops under the supervision of Castellani, were entirely immune from any epidemic and kept at a high peak of efficiency. It has been reported that the Italian troops in the Ethiopian campaign had a percentage of sickness lower than that of the Italian troops quartered in Italy under peace conditions during the same period.

Aside from any political consideration, which has no place in science, the Ethiopian campaign demonstrated that a superior medical organization can keep in good health troops fighting under difficult conditions in tropical countries. There is no reason why this success cannot be duplicated anywhere else in the world during the present war. It would, perhaps, be useful if our medical officers on duty in tropical countries, or expecting to go there, would get acquainted with the prophylactic measures taken by Castellani during the Ethiopian campaign. I will mention only a few of these measures:

1. Preventive vaccinations: As a prophylactic of recurrent fever, Fowler's solution has been experimented on a large scale in Ethiopia.

2. Quarantine of suspicious cases, and the periodical examinations of men in jobs, where an epidemic may easily originate, in order to detect carriers.

3. Careful selection of diets. In the tropics, in addition to diseases of animal origin, are found deficiency diseases, such as many tropical anemias and some dermatoses, which benefit from the administration of vitamins. Foods are spoiled in the tropics with greater ease than in our own country. The use of meat, fish, fats, and fruits must be watched with the greatest care, because bacteria introduced accidentally into such foods have good opportunity to develop at the normal temperature. On the other hand, fats, under the influence of heat, may be transformed into toxic fatty acids, such as butyric acid, valerianic acid, stearic acid, lactic acid or acetic acid. Many fruits found in the tropics contain poisons, such as strychnine, quinine, and belladonna. Proteins containing such necessary amino acids as histidine, tyrosine, tryptophan, leucin and arginin, may form very toxic amines, such as histamine, tyramine, indol, methylamine, and others.

4. Drinking water which is free from pollution.

5. Installation of sewerage, wherever this is practicable.

6. Careful selection of clothing. It must be borne in mind that climate may be exceedingly cool in the evenings and soldiers should be protected against falling temperatures. Soldiers should sleep under nets to protect themselves against mosquito and fly bites.

7. Prevention of tropical ulcers. This can be achieved by calling the attention of the soldiers to every small excoriation, particularly on the lower extremities, and disinfecting every mosquito bite, or small lesions caused by splinters. All these excoriations should be protected in order to avoid contamination with soil and water. Tropical ulcer is not exclusively a disease of the natives, but may affect the white population as well. If prophylaxis has been neglected then treatment with iodoform vapors should be administered promptly.

Bacteriological Warfare

Several times various press dispatches have reported that Japanese troops have been engaged in active bacteriological warfare and spread virulent bacteria along the countrysides of China. Even recently such a report has been circulated and a supposed expert vouched for the report, stating that "there was no doubt that 'germs' had been spread by the enemy."

This is naive nonsense. In China, as well as in India, cholera and plague are endemic. In 1932, for example, an epidemic of cholera broke out in the International Settlement and spread to other areas of China. There is no need of "foreign germs"; those natives of the country are already sufficient.

Last year the Germans circulated the news that the Russians had thrown on German positions bombs laden with bacteria. More nonsense, which stands up much less firmly on its legs, if one just stops to think that the heat produced by the explosion inside the bomb would certainly reduce the bacteria to ashes.

These various reports are circulated in a subtle manner, because of the implications of inhumanity on the part of an enemy who recurs to such a war weapon. Without passing judgment on the issue of humanity—which is strictly a moral matter and therefore nonscientific—we may say without hesitation that warfare, as it is practiced today, is bacteria plus explosives, whereas bacteriological warfare would be bacteria minus explosives, and therefore minus all the destruction of lives and property that goes with explosives. With a little sense of humor it can be assumed that bacteriological warfare would be a more humane and more scientific kind of warfare.

The question comes up, what effect would the release of a few thousand plague infected rats have upon the city of Tokyo? The effect would be minimal, in my opinion, the chances of an epidemic in grand style being remote. Plague infected rats are found all through the Orient and as far west as Tunis and other Mediterranean countries and as far as the Territory of Hawaii, or as near as Ecuador or Peru. With sanitary precautions an epidemic among the civilian population can be controlled easily. In my opinion, the effect of these rats would be less than that of a single bomb loosed upon the sewer system or water supply of Tokyo, with consequent pollution of the drinking water. The small foci of infections which bacteriological warfare

would spread could be brought under control very easily and effectively, whereas damage by bombs might become irreparable. Food contaminated by the excreta of rats can still be sterilized by cooking, whereas food destroyed by explosives is irremediably lost.

Epidemics of cholera and plague have not spread in China for want of bacteria, as these bacteria are found all through the vast country, and many carriers are certainly present in the Chinese armies, which we know lack adequate medical and sanitary assistance. In this country, influenza has not taken the form of an epidemic for want of virus, nor have sylvatic plague in the West and equine encephalitis in the Middle West failed to spread for lack of reservoirs. It is well known that fleas may transmit sylvatic plague and birds may carry the virus of encephalitis. The truth is that epidemics are not started by just spreading a few bouillon tubes of cultures. In the Middle Ages, a similar belief that poisoners spread powders near the fountains to propagate plague led to unjustified persecution of innocent persons. We should avoid the repetition of medieval persecutions and unnecessary bitterness.

In epidemics there is an unknown factor which bacteriologists and immunologists are unable to grasp and to reproduce at will. This unknown factor has been called "epidemic genius", that something unknown that all at once increases the virulence of bacteria or decreases the resistance and relative immunity of the population. We see this factor play a rôle in every local or general epidemic, and we are unable to understand it or in any way reproduce it. Influenza, poliomyelitis, exanthemata are endemic in this country, but not always epidemic. Let us assume for a moment that an invading army tried to knock down the resistance of the opposing army by spreading bacteria. There would be, however, no guaranty that the epidemic thus initiated would not pass to the invading troops, as they enter into the territory where this epidemic has been produced. In such a case, an offensive might be fatal to the invading army as well as to the retreating army, or perhaps even more fatal to the invading army as the retreating army takes up positions in a less infected region.

Of course, we must exclude the possibility that someone may discover a virus which would be very diffusible among the adversary and against which invading troops could be vaccinated. In such a case, a certain advantage would be gained by protected troops over undefended troops.

Such an event is, however, entirely hypothetical, but should receive some consideration in view of the possibility. Even in this case, we must consider the chance that such a virus might be carried back home by soldiers on leave and cause a widespread epidemic in the country where its discovery had been made.

In conclusion, bacteriological warfare has not been developed sufficiently to be used in the present war with assurance of success and with a guaranty of immunity for the attacking troops. At best, it is a poor psychological weapon of propaganda.

U. S. Army Research in Tropical Medicine

The Army Medical Department has been carrying out extensive researches in tropical medicine and sanitation and has made many brilliant contributions in this field. Civilian doctors who expect to serve soon as medical officers in the armed forces may obtain information regarding control of diseases in tropical regions by writing the Surgeon General, U. S. Army, Washington, D. C.

References

1. Castiglioni: Ferite dell' addome, *Atti Acc. Med. Lomb.* 29:461, 1940.
2. Castronuovo: Lecture on tropical medicine, *Giorn. It. Mal. Esotiche.* 10, 1, 1937.
3. Ettorre: Trattamento primario delle ferite di guerra, *Atti Acc. Med. Lomb.* 29:461, 1940.
4. Fasiani: Consider. sui nuovi orient. di cura delle ferite craniocerebrali, *Atti Acc. Med. Lomb.* 29:435, 1940.
5. Mennonna: Igiene e profilassi nel corpo indigeni, *Giorn. Cl. Trop.* 1:178, 1937.
6. Puntoni: Possibilita' di un'offesa batteriologica in guerra, *Croce Rossa* 2:107, 1935.

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CODE PROBLEMS IN EAR, NOSE AND THROAT DISEASES IN THE RADIO SCHOOL OF THE ARMY AIR CORPS

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Radio progress in relationship to aviation is very vital to our airway defense program. From the various European countries we have learned recently that no branch of the air corps is as vital to the safety of the nation as is the radio communication system; and especially so is the radio code. Right now thousands of our youths are attending radio schools, and every four months hundreds of students are being graduated.

Problems are being presented constantly for solution at the radio school, particularly in relation to eye, ear, nose and throat ailments.

Hence, many symptoms, both subjective and objective, were brought to my attention while in charge of the Eye, Ear, Nose and Throat Clinic at Scott Field Station Hospital. Complaints were registered ranging from headaches, vertigo, nausea, earaches, tinnitus aurium, and deafness with and without tinnitus. The most frequent complaint was the inability to concentrate on studies. If one cannot adopt himself to his new environment, or if dissatisfaction exists with one's work, malingering might be resorted to in order to escape the responsibilities. A very common complaint was the experience of pressure over both ears from the ear phones.

In the above mentioned group only twenty-three soldiers gave complaints related to the radio code and thirty-two did not.

It will be interesting to note the results I found in a special survey of ninety-seven radio students who registered the following complaints:

Findings in Survey of Ninety-seven Students

Right earache, twenty-two patients; left earache, twenty-five; bilateral earache, ten; bilateral tinnitus aurium, eight; right tinnitus aurium, two; left tinnitus aurium, six; left discharging ear, three; right discharging ear, four; indistinctness of code, one; left ear plugged, five; right ear plugged, four; both ears plugged, four; itching of right ear, one; tightness of both eardrums, one; pressure in left eardrum, one.

The pathological conditions found in these patients were as follows: Cerumen, fifteen patients; otitis media, acute, twelve; sinusitis, acute and chronic, five; deflected septum, six; furuncle of external auditory canal, five; malingering, with bilateral thickened drums also present, one; chronic otitis media, four; nasopharyngitis, acute, three; pharyngitis, acute, two; eczema of external auditory canal, one; retracted and thickened tympanic membrane, one; otitis media (postscarlatinal), one. There were negative findings in forty-one patients.

There were three interesting conditions in this group as follows:

1. One patient had a sixty percent deflected septum; left mastoid was sclerotic; left and right eardrums were retracted. There had been no previous ear trouble until taking code course.

2. Another patient had thirty percent deflected septum; drums thickened and retracted; exostosis and sclerotic mastoid, and the audiometer showed sixteen percent loss of hearing on the right side and twenty-five percent loss on the left. The present complaint was caused by the radio code.

3. The third patient complained of a catarrhal condition of the left ear, with deafness while taking the code. Audiometric examination showed nine and three-tenths percent loss of useful hearing in the right ear, and fifty-one percent loss in the left ear. Hearing tests showed the following: Whisper: right ear, 15/20; left ear 1/20; conversation: right ear, 20/20; left ear, 10/20.

X ray examinations in this survey were indicated in only seven cases. In these cases the following pathological conditions were disclosed: Cloudy frontal sinuses, three; hypertrophied mucous membrane, showing previous sinus disease, two; acute maxillary sinusitis, one; frontal, left ethmoid sinus disease, one.

A dental survey was also done; examination was not indicated in thirty-seven patients; and the balance seen showed no pathology of the teeth.

The hearing tests were also included in the survey, and the following information was disclosed:

Of the total number checked in the survey twenty-four cases showed no indications. Twenty-nine showed normal hearing in the right ear, and twenty-seven showed normal hearing in the left ear. Two patients had 15/20 in right ear (twenty-five percent loss of useful hearing), and three had 15/20 in left ear. One case showed 10/20 in the left ear (fifty percent loss of useful hearing).

Audiometric tests were performed in forty-two cases as the balance showed no indication. The results were as follows:

Percentage of Loss of Useful Hearing

One to four percent loss of useful hearing was found in three right ears and six left ears.

Five to ten percent loss was found in six right ears and three left ears.

Eleven to nineteen percent loss was found in ten right ears and five left ears.

Twenty-one to fifty-one percent loss was found in one right ear and five left ears.

The school history of the students examined disclosed that eighty had records ranging from satisfactory to excellent. Of this number, thirty-one were satisfactory and forty-nine had an excellent rating. Seven were dropped from the school due to the fact that my recommendations to the director of the radio school asked that they be discharged because of incurable ear conditions. Four students failed because they did not possess the aptitude for radio operating. Six were dropped mid-term for failing grades in class work. My clinical findings bear out the fact that those who showed negative pathological findings proved to be excellent students, while those with mild clinical findings were either merely satisfactory as students or failed. It is evident that those who just passed or had failed could have been much better students if the clinical deficiency had not existed before they matriculated at the radio school.

Conditions in Which Code Deficiencies May Occur

In view of the foregoing findings, it is apparent that soldiers can complain of code deficiencies in the following conditions: Cerumen in ears; colds; nasopharyngitis (acute and chronic); deficiency in hearing; foci of infections (sinusitis, acute or chronic; tonsillitis, acute or chronic; dental infections and other foci, such as prostatitis and chronic appendicitis); malingering in hearing or pain over temporal or mastoid bones (where individual is doing poorly in his general school or code work); acute or chronic discharge from one or both ears; deflected septum, and thickened ear drums caused thereby; high blood pressure (persistent or intermittent); syphilis may be another cause and which would require Wassermann tests; exostosis (overgrowth of the bony portion of the external auditory canal). There may be other miscellaneous rare causes such as aneurysm of the cerebral arteries; trauma to the middle and internal ear; endocrine disturbances, and various types of neurosis and hysteria, etc.

Conclusion

In conclusion, men who are going to be sent to radio schools from reception centers should have a careful check of ear, nose and throat conditions. Also visual examinations should be performed, as concentrated studies place greater demands upon the eyesight. If practicable, men should be interviewed as to their first choice relative to radio instruction; this would eliminate the undesirable students. Foci of infection should be looked for and when encountered should be considered cause for rejection. Hearing and audiometric tests should be done in a quiet room by an eye, ear, nose and throat medical officer under proper conditions. By doing this, many of these complaints will be eliminated when students come to the radio school and more efficient work could be done. Thus the government would save considerable expense if the undesirable student candidates of the radio schools were eliminated before admission.

502 PARK AVENUE

THE NEUROPSYCHIATRIST IN ARMY EXAMINATIONS

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The army psychiatrist's chief function is to examine selectees, and in this manner he becomes a member of the group board of specialists who examine U. S. Army prospects, physically and mentally. He diagnoses organic and functional deviations of the mental, emotional, endocrine and nervous systems, and more specifically tries to rule out feeblemindedness, insanities, epilepsy, the various addictions, neuroses, psychoneuroses, asthenias, endocrine disorders, serious traumata which may cause serious consequences, evidences of paralyses, atrophies, tremors, incontinence, previous hospitalizations, incarcerations, malingering, sensory and motor disturbances, and instabilities.

He inquires into the schooling of selectees, their regular or irregular occupations, their likes and dislikes, family hospitalizations and deviations. It is essential to know their habits as they relate to alcohol, nicotine, drugs and sex practices; also how they spend their leisure time. It is important to know something about their home environment, their attitude toward parents and siblings, teachers, employers, fellow employes, neighbors and associates, members of their own and the opposite sex, and particularly toward the Army.

The pyschiatrist at times must cooperate with other members of the board in cases where malingering may be suspected because of physical and mental symptoms and complaints. Finally, he should encourage the selectee through the use of quick, short, positive, and cheerful suggestion.

Causes of Rejection

The Army needs men who can be trained quickly into useful and efficient soldiers. Feebleminded individuals who are not teachable or whose learning ability is slow and limited should be rejected. Among the principal causes of rejection are the following: serious psychoneuroses and frank psychoses; mental deviations which can be classified as schizoid personalities, schizophrenia, manic, depressive psychoses; paranoid types, psychopathic personalities; deteriorations from the excessive use of alcohol and drugs; pellagra with advanced neuritis and skin and mucous membrane involvements; serious undernourishment or marked overnourishment; considerable undersize or oversize (which conditions can be associated with endocrine or mental causes); manifestations of organic brain disease, posttraumatic paresis, cerebral syndrome, postencephalitis with residuals, epilepsies, poliomyelitis with residuals, multiple sclerosis, neurocirculatory asthenia, definite paralyses, definite neuritides, cerebrospinal lesions, hysteria and homosexuality.

A few such selectees have reached camps with their conditions undiagnosed. These men showed difficulty in carrying out orders, spent much time in the hospitals and guard houses, and were prone to A.W.O.L. They proved their inefficiency and troublesomeness, and interfered with the duties of the normal soldiers. This could be expected even though the deviations may not have been advanced. With a little strain, and as time progressed, the condition of these men became aggravated and they "broke", which resulted in hospitalization, legal action, certificates of disability and discharge, appearance before inaptitude boards, and many unnecessary troubles.

Some maintain that the Army cures or helps mental and emotional difficulties. This is not true. The Army should not be used as a therapeutic agent, because such selectees do not improve, but become worse, and interfere with the other soldiers. When a draftee is diagnosed as suffering from mental, emotional or endocrine disorders (functional or organic), it must be remembered that, generally speaking, these conditions become aggravated under strain, camp and combat life, and finally, the man will have to be discharged from the Army. He certainly will be of no use for active service or as a reserve. It is important to recognize these cases in their incipient states and reject the men before induction. In case of doubt, the draftee should be rejected. Many of the types of cases enumerated above have been seen, and, although rejections have been the rule, some have slipped through, with the unfortunate result that much time and effort were necessary later to rid the Army of these men. The psychiatrist can do much in helping the Army develop better men by inducting good material from the start; men who will be able to take better training, learn faster, understand orders more accurately, and execute them with greater efficiency.

It must also be remembered that by rejecting the unsuitable and questionable cases, the Veteran's Bureau will not have to hospitalize so many patients, and will not have to pay compensation to these men and their families for years to come.

There are malingerers who try to evade the Army, and, on rare occasions, they may succeed in causing the psychiatrist to make a diagnosis which may reject them. Some malingerers are recognized as such, and, when placed in the Army, finally make good. Others continue trouble-making, and it would have been better to have rejected them.

Problems arise with cases of hysteria, conversion hysteria, and vague psychogenic mental and physical complaints, all of which may be mild at the time of examination. There are other problem cases with histories of epilepsy which have not manifested convulsions for years, or cases where it may be difficult to verify or disprove attacks or epileptic equivalents. Then, there are cases with mild residuals of postencephalitis and anterior poliomyelitis. The question then of acceptance or rejection should be settled by special conferences of the board of psychiatrists, rather than by one psychiatrist. These conferences can be held on all questionable cases after the socalled normal selectees or applicants have been accepted.

Cases of recidivism (criminal), psychopathic personality, chronic alcoholism, mental deterioration due to any cause or causes, psychoses with definite syndromes, multiple sclerosis, homosexuality, cerebral lesions with or without trauma (but symptomatic), cases with symptoms which are manifested by post cerebrospinal infection or injuries, paralyses due to any causes, serious mental or emotional instabilities, men-

tal deficiency below the ten year level, and illiteracy, all should be rejected.

Interpretation of Deviations from the Normal

The Army psychiatrist should have wide and varied institutional or private psychiatric experience. He can then make quicker and more accurate interpretations of the mentalities and personalities of the selectees. Academic training and verbalization abilities are important, but still more important is wide experience over long periods of time, with numerous cases, in the psychiatric field.

Since, there are many cases to be seen daily by the Army psychiatrists, at the examination stations, it is not practicable for all the psychiatrists of each station to see each draftee simultaneously, but in doubtful cases only should there be boards of psychiatrists for such examinations.

It is important to remember that by merely looking at a selectee it may be impossible to determine his mental and emotional condition and his suitability for the Army. Looks are often deceiving when mentality, personality, and character are concerned. In rare and advanced cases, the appearance of the person may be of some help for diagnosis. This is particularly applicable to formative aments, deteriorated individuals, and some homosexuals, but is not necessarily so in the cases of young men who are applicants for the Army.

The ability to give, take, and exchange emotions; the expression of the face; the attitude, interest, attention; the reaction time; quickness of response; alertness; knowledge of current events; history of age of entering and leaving school; ability to get along with parents, relatives, friends, employers, and employees; degrees of interest in others, in sports, and current events; special likes and dislikes; ability to add figures and repeat four numbers backwards, as well as carry out four directions; Marie's, Masselon's, Ziehen and Knox cube tests; occupational history; length of time spent on each job; reasons for changes of employment; future ambitions; and chief complaints, all are important elements and quick means of determining what studies and investigations should be continued in order to make a diagnosis.

Helpful Questions

The following are some helpful questions which may lead to further studies necessary for certain diagnoses:

How old were you when you started school?
When did you stop going to school?
What troubles did you have in school?
Were you truant?
Did your parents pay fines for your truancy?
Were you suspended or expelled?
What subjects were the easiest, and the hardest?
How old were you when you started working?
Have you a driver's license?
How long did you hold your first job, your second job, your third and last jobs?
Give reasons for changing jobs.
What is your present salary?
When did you get a raise?
How do you like your boss and fellow workers?
What do your friends say about you?
What do your enemies say about you?
What statements are made to your face, and which ones are made behind your back?
How do you get along with your boy friends, girl friends, and people in general?
How often do you attend movies, baseball games, outings, etc.?
How often do you get drunk?
When were you drunk last?
How many cigarettes do you smoke per day?
How often, and what kind of medicines do you take?
What sicknesses, accidents, and operations have you had?
When did you last see a doctor, and for what reason?
Gives the names and addresses of the doctors and hospitals where you accepted treatment.
What kind of headaches, dizzy spells, other spells, pains, aches, and symptoms do you have? Explain.
Were you ever unconscious? Explain.
When did you wet the bed last?
What troubles did you have with the police?
Do you have strange feelings, hear noises, see spots before your eyes, or do you see strange images?
What imaginations or ideas bother you?
When did you have your last fright?
How many fights did you have in the last year or two?
Do you work regularly?
What do you think of your fellow workers, your boss, your neighbors, and yourself?
Repeat backwards: 5, 9, 1, 6.
Add 18 and 14.
Who is the Governor of your State?
What are the President's initials?
What is the population of New York City? Your capital city?
Do you like to enter the Army? Why?

The selectee should also carry out the Knox cube test, and the Masselon, Ziehen, and Marie tests, in cases of malingering, and illiteracy in English and feebleminded suspects.

The aforementioned questions, when added to the history and records submitted by the Local Boards are sufficient to give clues to the psychiatrist as to what, if any, further examinations are necessary.

At times the suggestion, *"Who is making it difficult for you?"* repeated in different words, may help to unearth paranoid trends. This may result in unsuspected delusional answers, which can be followed up or repeated in case of negative replies. *An important point to remember is: Don't take one or two negative or affirmative statements as final.* Often the selectee will reverse himself, or will give entirely different answers and clues to real diagnoses. Suspect every selectee as being abnormal, until proven otherwise, but don't let him know you think so. Act friendly and encourage the selectee to do most of the talking, and permit him to feel free to express himself unhampered. Urge him to tell the truth, and to say what is in his mind.

Encouraging statements may have to be repeated a number of times. Often it may be impractical to allow the selectee to talk as much as he pleases, so that in order to conserve time, stereotyped and certain directed questions are necessary. In fact, this is usually the rule. It cannot be overemphasized that the psychiatrist should remember not to depend solely upon the appearance of the draftee and upon single negative or affirmative answers in order to come to conclusions. Generally, encouraged spontaneity and directed thinking are essential for a quick diagnosis.

It may sound paradoxical that for diagnosis more directed thinking is essential, whereas for psychotherapy more undirected thinking is advisable. It can be readily seen that by using directed methods, less time is consumed, and it is the better method when groups are considered. When attempting to use undirected thinking, more time is involved even though it is more individualistic. Psychiatric examinations should be

made privately, and the methods of approach may have to vary according to experience, training, place of examination, the number to be examined, and the type of patient studied.

When a psychiatrist first starts his examinations for the Army, the work is more detailed, often redundant, and more time-consuming. With more experience, the examination time is considerably reduced, and the method becomes more practical, brief, and efficient.

For a quick neurological examination, watch the selectee's gait and posture first with his eyes open, then with them closed. Look for peculiarities in gait, ataxia, irregular movements of the muscles and extremities, tremors, unsteadiness, muscular weakness, and discoloration. Tests for abnormal and unequal reflexes, incompetent muscles, atrophies, dystrophies, asthenias, and inequalities and dyssymmetries of the musculature, as well as localized spasm, tenderness, and abnormalities of sensation, are revealing and informative, and furnish clues for further studies. When deviations are found, more detailed examinations should follow.

The psychiatrist should function favorably in Army station, general, evacuation and base hospitals, for diagnostic and therapeutic work, but he should also function as a Board member in cases where soldiers have mysterious ailments, in disciplinary cases, and when efficiencies, demotions and promotions are involved.

In conclusion, the psychiatrist is an important member of the U. S. Army, and is partially responsible for the selection of good material. Cases which may result in hospitalization, inefficiency, aggravation of mental, emotional, or glandular disorders, or which may be interpreted as being poor risks, should be rejected. Well trained and experienced psychiatrists will add greatly to the economy and efficiency of the U. S. Army, and may save the Government large sums of money by preventing hospitalizations in the Veteran's Administration Facility, and by lessening compensation for disabilities.

504 Carnegie Hall

ANTIBACTERIAL AND HEALING FACTORS IN THE CLOSED PLASTER TREATMENT OF WOUNDS*

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The closed plaster treatment is fast becoming a standard practice in the treatment of both compound and nonfracture wounds. No satisfactory explanation is offered why injured and infected tissues underneath the plaster respond so well. It was thought that the small clots, which were continually loosened by the repeated bandaging, plug capillaries and prevent bacteria from spreading through the smaller blood vessels. One could offer here another explanation, namely, immobilization aids healing, prevents outside contamination, induces bacteriophage production and inhibits toxin formation.

Bacteriophages, contrary to texts, are not agents resident in bacterial bodies, later to be liberated and destroy their hosts, but are derived from normal body tissue which has undergone decomposition by the bacteriophagenic enzymes inherent in the bacterial bodies. Bacteriophages are bacteria-made viruses. Being derived from specific protein material, they retain some of the latter's enzymes and their biological activities. They, like all enzymes and viruses, are of protein nature and/or associated with protein, and reproduce themselves from specific interactions with body tissue they show selective affinities for. Structural correspondences exist between these various catalytic agents and the organic material from which they are derived. All are rendered inactive by various physiochemical means and often can be restored to activity again. When obtained in highly purified states, i.e., when completely separated from their substrata and enzyme activators, they become inactive, reverting to their proviral and proenzyme states.

The enzymic behavior of the viruses is well illustrated in a rabies infection. Here the rabies virus enzyme becomes activated in specific nerve material at the initial lesion, and under suitable anaerobiosis, grows in autocatalytic fashion, reproducing itself and producing the deadly rabies toxin from specific nerve elements which the rabies virus-enzyme is capable of decomposing. This toxigenetic enzymic process moves progressively upward to the brain and central nervous system where the toxin resulting from nerve tissue breakdown forms in sufficient amount and strength to cause such irritation to manifest itself in the symptoms of this disease.

There is a close analogy of tetanus to rabies. For this reason the closed plaster treatment should not be used without due regard to this and other infections as the gas bacillus, etc. One of the neurotoxins in tetanus is tetanotoxin $C_5H_{11}N$. It appears to result, under anaerobiosis, when the enzymes of the tetanus bacilli come in contact with the nerve bases neurine $C_5H_{13}NO$, and choline $C_5H_{15}NO_2$. There is also some evidence that the nerve element, leuceine $C_6H_{11}NO_2$, is the precursor of tetanotoxin when decarboxylized and CO_2 is split off. (With neurine, and choline, the elements of water are withdrawn by the tetanus toxigenetic enzyme process). These nerve tissue changes, as in rabies, commence at the initial lesion, progressing upward appropriate nerve tracts, producing toxin through nerve-element breakdown until the brain is reached and similarly affected when the symptoms of the infection then manifests itself. Nerves are incapable of transmitting toxins, and no one yet has been able to demonstrate either an exo- or an endotoxin of tetanus. However, one can demonstrate the presence of enzymes in the bacterial bodies, the true toxin producers. (Thus far, by any known laboratory means, one has not been able to break a protein down to a virus, a bac-

*Some of the views expressed are of necessity dogmatic and represent only one opinion of controversial subjects, and may be contrary to all precepts and/or opposed to the principles of sound reasoning.

teriophage, or for that matter, to any bacterial or viral toxin. Certain bacterial toxin-like substances, though not definitely identified as being identical, have been thus obtained and capable of reproducing the same symptoms peculiar to the infectious disease in total absence of any bacterial body. Such production of "infectious diseases" sans corpus delecti, should change present day concepts of toxins the toxicity of which is responsible for the symptoms of the disease.

Little if any research has been done on the bacterial and viral enzyme systems, and the manner in which they are capable of producing toxins. Probably, without exception, each infectious disease may be defined as one resulting from a specific enzymic decomposition of some particular body tissue, induced by the enzyme of the infectious organism which is able to manufacture its own typical toxin the toxicity of which is responsible for the symptoms of the disease. One may quote another example for illustrative purposes, namely, the gas bacillus infection. One of the main toxins here responsible for the toxic symptoms of this disease is derived from muscle glycine $C_2H_5NO_2$, being known as methylamine CH_5N, and is formed by decarboxylation and splitting off of CO_2. Both the gaseous amine, methylamine, and the carbon dioxide, are responsible for the gaseous distention and extreme toxemia of this disease. (Most of the amino acids in the body can be broken down to toxic amines by the enzymes of numerous infecting agents, each exerting different toxic and enzymic effects in the system.)

In the treatment of infected wounds, the sulfonamides and drugs of a similar nature exert properties identical with the antitoxins and antibodies, that is, they owe their specific effects to depressant enzyme activities of various infective organisms. They appear to exert an inactivating enzyme-effect and/or are capable of uniting with the bacterial and viral enzyme activators, etc., to subdue and inhibit further enzymic activity and growth. In administering tetanus antitoxin, for instance, all one can hope to do is to prevent such further toxin formation (much as putting out a burning fuse to prevent a major explosion). Tetanus antitoxin exerts no effect whatsoever on any toxin already formed in the body, and is a useless agent when the toxin is already in the brain.

By identifying the chemical formulæ and spatial patterns of the very numerous toxins produced in the course of disease, one should be able to determine the specific body material from which such toxins are derived. With this fuller knowledge of toxin formation, material assistance will be available in advancing our understanding of the biological processes involved and make available more scientific methods for combatting disease.

346 NORTH VERMONT AVENUE

WAR WOUNDS AND INJURIES

General Considerations

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War is a contest in which the primary object is to eliminate and incapacitate as many men as possible. This is accomplished by inflicting wounds and injuries of varying degrees of severity. Many of these wounds and injuries are so extensive as to cause immediate death; others are not quite so severe. It is with these that we shall concern ourselves in this paper.

Methods of Procedure

There are a few simple rules which should be kept in mind at all times:

1. The main problems of surgery at the front are the control of pain and hemorrhage, and the prevention of infection.
2. With the exception of first-aid dressing, the subsequent care must include carrying out all necessary treatment of the wound.
3. Conservative treatment should be reserved for single or multiple wounds in which the entrance and exit wounds are regular.
4. Operative treatment should be carried out in all bullet wounds complicated by hemorrhage or hematoma formation, in all cases with large exit wounds, in lacerated wounds and in wounds of the abdomen, chest, skull, joints or large arteries.
5. Operative treatment should be carried out within a six to eight hour period, if possible.
6. In some cases severe infection starts within a few hours after wounding.
7. In no circumstances should a recently wounded man be allowed to wait unnecessarily before receiving treatment.

Prophylactic Treatment

In regard to the prophylactic treatment of wounds the following are basic principles:

1. Many soft tissue wounds go on to massive infection.
2. Unnecessary operations may be as fatal as the failure to carry out operations when indicated.
3. Imperfect operations may often lead to serious illness.
4. Good incisions and the removal of all damaged tissue and foreign bodies are essential; the whole region must be drained.
5. The tracks of all artillery wounds must be drained.
6. Primary suture should never be carried out except by experienced surgeons working under good conditions.

In connection with complicated wounds, the following points should be kept in mind:

1. The primary operation should have as its object the removal of all potentially infected tissue, but the question of ultimate function must also be considered.
2. Active and passive movements are important from an early stage.
3. Soft tissue wounds must be adequately splinted but the splints must be removed as soon as they have served their purpose.
4. The possibility of scarring and subsequent contracture must always be borne in mind.

5. The suture of large vessels is indicated only when life or limb is in danger.

6. Drainage in the vicinity of large vessels may provoke secondary hemorrhage.

Principles of Wound Treatment

The principles of wound treatment may be briefly summarized as follows:

1. Do not injure a wound, or a larger wound will be produced causing pain and fresh hemorrhage.

2. Large foreign bodies may be picked out with forceps, but no attempt should be made to remove small foreign bodies or grit. Wounds should not be explored with probes or bacteria will be carried to deeper levels.

3. Strong antiseptics should not be used in a wound.

4. The dressing should be applied with the greatest care, so that it does not move during transport.

5. Large wounds of soft tissues should be splinted as for fractures and the joints above and below immobilized.

6. If further hemorrhage occurs during the few hours after dressing, it should be controlled by the application of a compress bandage over the existing dressing.

7. All men with large wounds should be given morphine before being transported.

8. All wounded men must receive antitetanic serum without regard to possible anaphylaxis.

Treatment of Painful Wounds

The treatment of painful wounds can be divided into that which is necessary as a first aid measure; that which is called for during the first few days or weeks, and finally that which is required at a later stage, when the wounds have healed. For the alleviation of acute pain immediately after injuries are sustained, ether is the best analgesic. The pain is abolished almost at once. If it is not possible to give ether, morphine in full doses is called for; at least half a grain or more, if required.

The pain of a wound is much relieved by proper surgical treatment. Rest is an essential part of this, so that whenever possible the region of the body affected must be immobilized by splints. When plaster has been employed, continued pain of a throbbing character indicates spread of the infection and usually the presence of pus in the depths of the wound. In such circumstances the plaster must be removed.

The immediate pain which occurs within a period of two days to a few weeks usually is due to infection. Possibly the wound has been sutured and the skin and surface parts are aseptic, but there is infection in the deeper parts. Sometimes such pain is due to gas gangrene infection which may be demonstrated by x ray before such clinical signs as crepitation are evident. Excision of muscles, or even amputation, may be required. In cases of suspected gas infection the administration of sulfanilamide is imperative. Two grams dissolved in citric acid are given as a first dose, and then one gram every four hours for two days, after which the dose is reduced. The total amount of the drug should rarely exceed twenty grams. Nausea and other ill effects of sulfanilamide therapy are relieved if one hundred milligrams of nicotinic acid are given with each gram of sulfanilamide.

There are several causes of late pain in wounds. A painful scar is due to pressure on a small sensory nerve by the contracting fibrous tissue. An exquisitely tender spot can be discovered with a probe. Under local anesthesia a tenotomy knife is inserted through the skin one-half inch from the painful point. The blade is swept through the quadrant of a circle so as to divide the subcutaneous tissue, including the nerve, beneath the scar. The pain is then completely eliminated. Scars adherent to deeper structures, if not actually painful, may cause discomfort and disability. A recent method of treatment is the injection beneath the scar of liquefied human fat.

Foreign bodies remaining embedded in the tissues commonly give rise to some degree of pain. They should be searched for with x rays and removed. In large wounds, the possible presence of a swab or a rubber drainage tube which has been overlooked should be borne in mind.

The rare condition of paroxysmal attacks of pain following the healing of an infected wound is most commonly seen in the region of the distribution of the median and posterior tibial nerves. It is thought to be due to compression of the nervi-nervorum. The pain is burning in type and not easily localized, and it varies with the emotional state of the patient. It is often relieved by cold. Physiotherapy is harmful. Many patients recover after a few months, but severe cases may require sympathetic ganglionectomy for their cure.

Disinfection of Wounds

Prevention of infection in wounds is of the greatest importance. With the technical advances in chemistry made in the past few years a great variety of antiseptics are now available. Which are the most suitable chemical agents to apply to wounds?

Some antiseptics, such as carbolic acid, have a more or less general action upon bacteria, while others, as gentian violet, have a specific action in some species only. Many antiseptics have their power diminished by the presence of albuminous fluids. Acriflavine has as powerful an antibacterial action in serum as in non-albuminous fluid, but this action is decreased in a cellular fluid such as pus and blood. Some antiseptics have a greater affinity for dressings than for tissues. This is true of flavine which loses about eighty percent of its strength by adsorption to the gauze. The same is true of gentian violet. It is quite impossible to sterilize an infected wound by chemical antiseptics.

In a septic wound there is a natural antibacterial element provided by the normal tissue reaction. The ideal antiseptic should not harm tissue cells and leucocytes in concentration which inhibit bacteria. These conditions can actually be realized with the sulfanilamide compounds.

Many antiseptics have a physiological action quite apart from their antiseptic power. Thus Dakin's fluid and chloramine-T induce an increase in transudation of fluid from the walls of the wound and so drain it. This pouring out of fluid is an important factor in combating infection. The benefits obtained by the instillation of Dakin's fluid would seem to depend more upon this physiological effect than upon any antiseptic action.

In a recently inflicted wound, when the number of bacteria is small, a thorough application of an antiseptic may be of advantage because it may have a bacteriostatic action. One of the acridine compounds

would seem to be the most suitable for this purpose, because of the relatively slight interference with the tissue cells. The presence of a large number of bacteria, or of peptones, completely inhibits the action of a sulfanilamide compound. Hence the sulfanilamides are useful in freshly inflicted wounds but hopeless in getting rid of well established infections.

Antiseptics help in cleansing a wound, deodorize it, and prevent the access of further infection and the transference of infection to other cases. The possibilities of antiseptics are perhaps not fully realized. If they are applied to a wound during the first two hours, before the bacteria have invaded the surrounding tissues, they have only to destroy bacteria in the cavity of the wound. The problem is much more difficult later. The time factor is, therefore, extremely important.

Experiments by a number of workers agree in showing that fatal infection by virulent streptococci can be averted by the treatment of wounds with acridine compounds at any time within the first two hours after their infliction and their contamination with these bacteria. Phenol, perchloride of mercury, and other commonly used antiseptics, consistently fail in such experiments.

The results of the local application of sulfanilamide compounds to wounds are considered to be favorable. The method of administration is by means of a thick suspension, made by adding two grams of powdered sulfanilamide to one hundred cc. of a 0.8 percent solution of the drug in physiological saline solution. This suspension in either open or closed wounds usually gives satisfactory results in infections caused by the bacterium coli, hemolytic streptococci, Cl. Welchii or the gonococcus. When infections due to pneumonococci or staphylococci are to be treated, sulfapyridine and sulfathiazole are preferable. Local application should be carried out three times a day.

In the treatment of compound fractures the powdered substance is applied directly to the raw surfaces. It does not seem necessary to sterilize the sulfanilamide or sulfathiazole powder. Local application would appear to be effective mainly as a prophylactic measure, because the bacteriostatic action of sulfanilamide is inhibited by the presence of peptones and bacteria, that is, by the products of bacterial action on the tissues, as well as by the organisms. The types of lesion in which the treatment seems to be successful are badly infected wounds of the scalp, surgical or other wounds of the thorax and pericardium, abdominal incisions which do not heal well, and infected wounds of the limbs, including fractures.

Management of Gas Gangrene

The development of infection in wounds inoculated by gas gangrene organisms may take hours or weeks. Excision, to be successful, should be carried out within six to eight hours after wounding, and never after twelve hours. The operation must be done thoroughly, and may take some time. No deep sutures should be used, cavities should be packed with vaseline gauze, and skin should be sutured only if it can be brought together without tension. The operative treatment is followed by plaster fixation whenever practicable. Infection with gas gangrene organisms may take the following clinical forms:

1. Local: infection of wound and adjacent tissues.
2. Group: infection of one or more muscles.
3. Segmental: involving whole of limb or region.
4. Fulminating: group of segmental infection associated with septicemia.
5. Recurrent: after operation for gas gangrene.

Local infections do not require operative treatment but immobilization is essential. Group infections must be treated by complete excision of the gangrenous muscles or groups of muscles. For this an adequate incision is essential, and muscle attachments, including the origins and insertions, must be removed completely.

Resulting cavities are packed with gauze soaked in vaseline, hydrogen peroxide or other antiseptic. The packing is followed by plaster fixation whenever possible, and failing this, by massive dressings to act as a splint. At a later stage skin-grafting may be required.

Segmental infections must be treated by amputation or wide excision. It is not dangerous to cut through infected as opposed to gangrenous tissue. In fulminating cases surgery must be radical and infected as well as gangrenous tissue must be removed. These patients will often require transfusion before operation.

Serums have proved useful in the treatment of gas gangrene. A quinquivalent serum made up by mixing monovalent sera as follows has been recommended: antiperfringens serum, antivibrion-septic serum and antiedematous serum, of each three parts; antihistolyticum serum, 1.5 parts; antisporogens serum, 0.5 part. The use of massive doses, up to two hundred cc. of this serum are recommended. In very serious cases of rapid gangrene, intravenous injections are the best route. This can be carried out if the serum is sufficiently diluted and administered slowly.

The local application of sulfanilamide compounds in gas gangrene has also proved of value. However, the sole use of these drugs to control gas gangrene infection cannot be relied upon.

Promoting the Healing of Wounds

It has now been established that the nonhealing or breakdown of a clean surgical wound is often due to a nutritional deficiency which affects cellular proliferation or the development of intercellular substance. On the basis of experimental work it is important to secure the saturation of all surgical patients with vitamin C, as a measure designed to obtain early, rapid and efficient wound healing, and to minimize complications.

It has been found that there is a fall in the plasma vitamin C level immediately after operation. Vitamin C is now regarded as among the essential elements in promoting the healing of wounds. The dietary history of all patients should be ascertained, particularly paying attention to signs and symptoms of vitamin C deficiency.

In all cases of vitamin C deficiency ascorbic acid should be given in doses of from one to four grams daily. When the vitamin C content of the fluids and tissues are increased, the tendency of wounds to heal will be greatly increased.

2069 EAST TWENTY-THIRD STREET

According to a recent survey by the American Optical Company, a total of 9,500,000 man-days were lost in the United States during 1941 because of industrial eye accidents—enough time for the building of seventeen destroyers!

FIRST AID SPLINTING OF BROKEN JAWS

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In his recently published article on "first aid and emergency treatment of gunshot wounds of the jaws" R. H. Ivy (1) shows very clearly and ingeniously what the procedure should be in cases of severe injuries to the maxilla or mandible, with all their complications. He described a simple splint which can be constructed and applied in a short time. This can be done at the scene of the accident with a few articles which every doctor has in his emergency kit. This emergency splint for injured jaws was developed at the Walter Reed Hospital.

Contributing to this emergency treatment, I shall describe the procedure of splint construction in such instances, which we developed during and after the First World War (2) and with which we had a great deal of experience and from which we obtained satisfactory results.

The articles which are essential and readily available at any time are: 1, A military cap, or any cap without a shield; 2, wooden sticks, such as tongue depressors; 3, adhesive plaster and cotton; 4, ligature wire or surgical suture material.

The cap should be pulled over the head and fit snugly. If it is too large, tighten it with strips of adhesive. It might also be more securely fitted to the head by passing strips of adhesive from the cap to the sides of the face, avoiding the hair of the scalp.

A cross-splint is made by placing two tongue depressors end to end with a third one overlapping and fastened with adhesive. This makes the long or vertical portion of the splint which measures about twelve inches. The horizontal portion is a single tongue depressor secured to the vertical splint about five or six inches below its upper end. To avoid ligatures from slipping, a notch is carved near the ends of the cross-splint.

The upper end of the vertical part of the cross-splint is secured to the frontal portion of the cap, first interposing a thick piece of cotton or rubber bath-sponge between the splint and the cap. This relieves pressure to the head and provides elasticity when traction is applied to the jaws (Fig. 1).

The broken jaws can now be wired to the splint. If there is a bilateral fracture of the mandible, the anterior portion together with the tongue will drop backwards. To correct this displacement, either flexible wire or heavy silk is passed around the front teeth and drawn forward and fastened to the lower end of the vertical splint. The spring-tension of these ligatures will draw the displaced fragment into almost normal position.

If there are no teeth to which to attach the traction sutures, a suitable needle threaded with heavy thread is passed through the skin below the chin and carried through the floor of the mouth close to the posterior aspect of the mandible and thence out of the mouth. The two ends are now properly secured to the lower end of the splint.

If the maxillæ are fractured the fragments hang downwards and backwards. A traction ligature is passed around the bicuspids or canines, whichever are found present, and carried forward to the ends of the horizontal part of the splint. This will pull the fragments of the maxilla upward and forward into place. In short, the vertical part of the splint is used for fixation of the mandible and the horizontal part for the maxilla.

FIG. 1.—Emergency splint for broken jaw.

This procedure for first aid care of fractures of the jaws has the following advantages over the Walter Reed Hospital technique:

1. Bandages can be eliminated.
2. Dressing is more secure; as against possibility of bandages loosening and slipping and in many instances even coming off, regardless of how expertly they have been applied.
3. A cross splint as against a vertical splint. The cross part of the former permits bringing fragments of the fractured maxilla upwards and forwards, while the vertical splint pulls in only one direction—forward.
4. Addition of a thick piece of cotton or sponge rubber placed between the splint and the forehead and over the nose increases the elasticity and traction of the whole splint and also relieves the soft structures of undue pressure.

The emphasis placed upon the difference between the two procedures, although apparently slight, is very important. It provides the doctor in combat zones with simple paraphernalia with which to render first aid and to the wounded soldier the most comfortable dress-

References

1. IVY, R. H.: *Mil. Surgeon* 89:197-291 (Aug.) 1941.
2. Hospital for Oral and Plastic Surgery, Germany.

4 FINGERBOARD ROAD

THROUGH MALARIA MANY WARS HAVE BEEN LOST

The Role of Quinine in War

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In the last desperate showdown, the Battle of Bataan ended because the quinine pills ran out. This is the opinion of Frank Hewlett who, as a United Press correspondent, saw the last scenes of the drama of Bataan and told their story. Thousands of American troops lay in two field hospitals, most of them ill with malaria. Other thousands were confined to camps with lighter cases of malaria. There was ammunition aplenty, as well as courage, but there was no quinine to fight that deadly enemy—malaria. Even before he left the Philippines General Douglas MacArthur expressed concern over the quinine shortage, saying: "We have been lucky from the health viewpoint, but it may be a different story soon—with the exhaustion of the quinine supply and the rainy season coming on." Some quinine was brought through the Japanese blockade, but it was not enough because, since January 1st, all troops had been required to take two pills daily. Many soldiers had a combination of malaria and mild forms of dysentery, which sapped their strength.

Malaria has changed the fate of many wars. It can be as terrible and destructive as any enemy weapon. While it is not as dangerous as bubonic plague or typhus fever which destroys thousands of lives in a short time, its chronic continuance slowly saps the strength of battalions, divisions and whole armies. The population of a country where malaria is epidemic, lose the power and the will to resist, and fall an easy prey to invading conquerors. After three centuries of malaria, Rome's military strength was broken, and the city was pillaged by the invading tribes from Germany. Malaria was one of the most efficient allies of the Goths and the Vandals.

Control of Malaria a War Problem

The combat against malaria is an urgent war problem for both American and Allied forces. Every soldier in the tropics carries quinine tablets in his knapsack—unless he runs out of them. Those little white tablets are indispensable for prevention as well as therapy in the tropics. Nearly all quinine came from Java, especially from Tjinjiroean with its oldest and largest government-owned plantation for the cultivation of the cinchona tree, the source of quinine.

The scourge of malaria, with its annual toll of ten million lives, now constitutes a greater menace than ever, since Java has fallen to the Japanese. Marston Taylor Bogert, professor of organic chemistry at Columbia University, estimated that there are eight hundred million cases of malaria extant today. In India alone there are over three and a half million deaths a year from malaria, and it has been said that on the Burma Road, in its construction and maintenance, more Chinese have been killed by malaria than by the Japanese in their invasion of China. The annual toll throughout the world equals the number of World War dead. There are about one million cases in the United States and about four thousand five hundred deaths annually from this disease. Malaria microbes are responsible for a third of all sickness in the tropics. Thus we can understand that the occupation of Java by the Japanese brings the United Nations face to face with a serious problem.

In former centuries the cause of malaria, of "fever" or the "shaking ague" as early American settlers called it, was not known. The memoirs of warriors in past centuries always tell us of severe attacks of fever they suffered from in foreign countries. This "fever", was in most cases identical with malaria.

Wars and Malaria in Ancient Italy

Italy was the classical country of combined wars and malaria throughout the Middle Ages. The *"mal aria"*, bad air, arising from the Italian swamps after nightfall and resulting in chills and fever, even gave the disease its name. The incessant raids of the Goths, Saracens and Normans destroyed what malaria had spared, and these invaders in turn were destroyed by malaria—especially as the foreigners did not enjoy the relative immunity the natives had partly developed.

An example of utter desolation by malaria was for long centuries the old Italian town of Ninfa near the Pontine marshes. Ninfa was a prosperous city particularly in the fifteenth and sixteenth centuries, but malaria compelled the inhabitants to flee the city about 1640. The visitor saw the dreary ruins with its walls, towers, churches half sunk in the marsh and buried under thick ivy—a city avoided and deserted like the empty streets of lava-buried Pompeii. Perhaps the draining of the Pontine marshes during the last few years has taken the curse off this old city too.

While conducting the war for the Directory against Austria, Napoleon laid siege to the North Italian city of Mantua in 1796-97. During the military operations the region was intentially flooded in order to increase the prevalent malaria. The disease struck the Austrians harder than the French since special medical and organizational measures supported the French army. Malaria, together with starvation—the garrison of Mantua had eaten their horses—forced twenty thousand men to surrender. When Mantua was gone, the road to Vienna lay open to the French army.

Ancient Rome enjoyed relative freedom from malaria while the surrounding marshes and plains were devastated by the disease. Two reasons brought about this advantage which made the Roman soldiers superior to their neighbors: Romulus, founder of the Eternal City, selected the hills upon which Rome stands because they were free of "pestilence". The low, marshy valleys between the hills, on the other hand, were drained by the famous Cloaca Maxima which carried the water from the entire area into the Tiber.

During the first three centuries of the Roman Republic, while continuous wars were raging with other powers for domination of Italy, the "marsh pestilence" was widespread throughout the peninsula. When in later centuries the Goths captured Rome, when they tore down the healthful aqueducts and stopped up the famous sewers, Rome became marshy. Malaria started spreading within the city. It diminished the strength

and power of the inhabitants and contributed to the downfall of Roman civilization.

Malaria had also precipitated the decline of Athens in the wars against Sparta. The disease was introduced into Greece from Africa during the fifth century B.C. Aristophanes, in his play *The Wasps*, mentions "shivers and fevers which by night strangled your fathers". Hippocrates observed that people who lived near swamps had fevers and enlarged spleens.

Alexander the Great had almost conquered the known world, but he died young before he could consolidate his world empire. The Greek-speaking empire of Macedonia fell apart and world domination passed to Rome. There have been many disputes about what killed Alexander, the discussions started soon after the king's untimely death.

Malaria, cerebrospinal meningitis, and acute alcoholism are the three most plausible causes of his premature death. No exact diagnosis could be made so far. Plutarch's and Arrian's early reports emphasize the long and severe fever conditions of Alexander's last illness. The suspicion of malaria perniciosa is well justified by their reports. Alexander's unexpected death had immense influence on the course of history.

Role of Malaria in Modern Warfare

In Spanish America, the malaria epidemic helped Spain retain a hold on the Caribbean region; foreign powers were afraid of invading these regions. When the English started to expand in the West Indies by capturing Puerto Rico in 1596, they were forced to withdraw because diseases, chiefly malaria, killed many in the expedition. Even the region of the Panama Canal might have passed early into foreign hands if the Isthmus had not previously been a "white man's grave" due to yellow fever and malaria.

During the Spanish-American War the United States Army soldiers were required to use mosquito nets and to carry on an active campaign against mosquito breeding. Malaria played a rôle all through the history of the United States, both before and since the Revolution. The annual death rate per 100,000 decreased from 4.1 in 1911-1915 to 0.5 in 1931-1935. The death rates are higher, however, in certain counties of the Southern states—between 50 and 100 per 100,000 population. This is still low in comparison with some Brazilian cities where the mortality rate from malaria was as high as 517 and 417 per 100,000 inhabitants.

The total reserve stock of quinine in the United States is estimated at a two years' supply—at its best. The annual peace-time consumption here is 4,500,000 ounces, some of which goes into hair tonics and cold cures. The world's annual consumption is 33,000,000 ounces. High-yielding cinchona trees are now being cultivated in Latin America with the help of the United States, but the product will not be available in quantity for some years to come. To develop new cinchona trees takes at least seven years.

The synthetic substitutes for quinine, atabrine and plasmoquine, "are not altogether satisfactory", according to Professor Bogert, because they can be administered only under medical supervision to avoid any toxic symptoms.

Russia's efforts to halt a German drive for the rich oil fields of the Caucasus may be hampered by the disease, which is especially prevalent in the Black Sea area, Professor Bogert declared. Russia, he said, is intensely malarial in the southern regions, and even in Leningrad infections are present in more than fifteen percent of the population. Malaria also threatens United States troops in the Caribbean area.

During the first World War malaria put seventy thousand British soldiers out of the fighting at Salonika, struck down thirty thousand in one year in Macedonia, and was similarly devastating in East Africa and Mesopotamia. At that time there was a lack of cooperation of the Dutch with the Allies; the Dutch, by their Java supplies, controlled ninety-five percent of the world's quinine supply. The British Navy with a knowledge of the vital importance of the quinine supply for their armies, threatened with blockade, and an agreement was reached.

The Dutch, up to the loss of the Netherlands East Indies, stripped about twenty-three million pounds of bark annually from trees grown on forty-two thousand acres of plantation. In India the annual yield of Government plantations is not more than seventy thousand pounds of quinine, while her annual consumption is two hundred thousand pounds and her real requirements of the alkaloid amount to one million pounds.

The Story of Quinine

Malaria has changed the fate of many wars, but war has also changed the fate of malaria, and its influence on human suffering. When Pizarro with his Spanish soldiers conquered Peru between 1531 and 1541, they encountered malaria everywhere. Coming from Spain, they were quite familiar with the disease.

One day, the story goes, a company of Spanish soldiers were marching through a forest. They had to abandon one of their soldiers who was shaken by vehement chills and fever. This poor man found a forest pool where he could quench his thirst. The water was intensely bitter, but he drank and drank, and, to everyone's surprise, recovered. The bitterness of the water, as later examination proved, was due to the presence of an old log lying in the water, a log of the cinchona tree.

The cinchona tree itself received its name from the Countess of Chinchon, wife of the Spanish Governor of Peru. She brought quinine to Spain in gratitude for her own recovery from malaria after treatment with cinchona bark in 1638.

The Peruvian bark was made into powder for use in therapy, and was brought to Spain and all of malaria-stricken Europe by the Jesuits. Hence came the familiar name of Jesuit-powder. In England Sir Robert Tabor effected marvelous cures with his secret medicine which actually was nothing but a disguised Jesuit-powder. Charles II of England sent Tabor as his personal messenger to King Louis XIV of France, whose son, the Dauphin, was ailing with malaria. The treatment was strikingly successful, and Tabor was richly rewarded by the happy king. Sir Robert's monument in Holy Trinity Church, Cambridge, bears the inscription "The Smasher of Fever."

In 1820 Pelletier and Caventou discovered the alkaloid quinine in the bark of the cinchona tree. In 1880 the French Army surgeon Laveran communicated his discovery of the presence of malaria germs in the blood of malaria victims to the Paris Academy of Sciences; and at the end of the nineteenth century Sir Ronald

Ross, of the Indian Medical Service, showed the Anopheles mosquito as the carrier of the malaria germ.

Malaria will continue, and will not fail to influence the outcome of wars, especially of wars of long duration. Quinine or no quinine, atabrine or plasmoquine or other substitute, there is the unalterable necessity of supplying the fighting troops in countries with tropical or semitropical climate with an effective drug both for prevention and treatment of the disease.

The Sources of Quinine

ERIC HARDY
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The extension of the war to the Far East has seriously threatened Java which produces about ninety percent of the world's supply of quinine, the most important antimalaria alkaloid for any campaign in tropical regions. Considerable concern has been voiced in medical and pharmaceutical circles for the future of the supply of quinine (1) and in view of the dangers to Java, other sources of this valuable drug will have to be found to supplement its supply. There are other sources, chiefly in India and South America, but how far they can replace the Javan supply in the event of enemy control of the Dutch East Indies is not clear.

Like rubber, the quinine tree is not native to the East Indies but was introduced for cultivation from the South American jungles. Wild plants still grow in its native haunts although the trees were nearly exterminated last century. There are a considerable number of Cinchona trees whose bark contains quinine ($C_{20}H_{24}N_2O_2$) along with cinchonine ($C_{19}H_{22}N_2O$) and cinchonidine, whose sulphates have the same actions and uses as sulphate of quinine. The latter is also obtainable from the bark of the Remijia tree which belong also to the Cinchonaceæ genus and of which there are thirteen species in Brazilian forests. Their name is from the Brazilian physician, Remijo. There are many species allied to the cinchonas and which also have a bitter bark, but although they are sometimes used to adulterate quinine, they are of no medicinal value.

Most of the cinchona trees are natives of the tropical parts of the Andes, chiefly between the equator and the southern tropic. They flourish best on the slopes of the mountains between altitudes of two thousand and eight thousand feet where there is plenty of sunshine and rainfall is copious because climate affects the production of bark more so than the soil. The trees have, however, been cultivated successfully in Colombia, Jamaica, the western Ghats, Southern India, beneath the Himalayas, Ceylon, Burma and Java. The Indian supply has so far been used for home consumption, and rarely entered the world market.

Cinchonas belong to the Rubiaceæ order and often grow to a great magnitude and even when cut down, their roots send up sufficient suckers to form a big bush. Smaller varieties grow on the higher mountains but many of the trees are in the almost impenetrable temperate jungle, on the middle part of the mountain slopes. They are all evergreens with laurel-like leaves in opposite pairs and flowers like the panicles of privet and lilac. The most important species are Cinchona officinalis of Ecuador and Peru, Cinchona Calisaya or "yellow bark" of Bolivia and eastern Peru, Cinchona succi rubra of the western slopes of Mount Chimborazo, Cinchona robusta or "red bark", and Cinchona legdoriana of Java.

The trees are felled in the dry season, and the hard, thick, grayish bark is then stripped in the form of long quills, dried and packed. Later it is powdered and the quinine is obtained by treatment with lime and extraction with alcohol. It is generally used as a salt, such as the sulphate, the hydrochloride or some double salts. Good bark yields from five to six percent of alkaloids, half of which will be quinine and cinchonidine. Peruvian bark, Jesuit bark and China bark are old trade names for the product, which has been cultivated in Java since 1852.

Quinine is not the only drug whose supplies are affected by the Pacific war. Siam was one of the main sources of cultivation of the Hydnocarpus trees, although it has been learned how to cultivate these trees in India at Mourbhanj. Japan, of course, held the monopoly of the world's raw camphor but camphor trees have also been grown in India, Burma, Ceylon, Malaya, the West Indies and East Africa in order to distill oil from the leaves and twigs, but probably because the industry and the trees are young in these regions, the results so far have not been equal to the Japanese. Synthetic camphor may also be obtained from the leaves of various Ocimum plants, which are perennial herbs widely distributed in East Africa and the Sudan, and some of which (Ocimum canum) have been cultivated in Russia. Ocimum kilimand has a yield of seventy percent camphor. Eucalyptus, also used in the treatment of malaria, is mainly an Australian product, but these plants have a much wider range of cultivation than the foregoing and they may also be produced in greater numbers in glasshouse culture in temperate climes.

Reference

1. HARDY, E.: *Nursing Mirror*, London, Jan. 31, 1942.

47 WOODSORREL ROAD

Portable Machine for Administering Anesthetics on the Battlefield

From the British Air Ministry comes the report that to save the wounded a new portable machine for administering anesthetics is being mass-produced in British automobile works. Sand was specially imported from Libya for experiments on a new portable vaporizing machine for administering anesthetics and artificial respiration on the battlefield and in air raids. One thousand of the machines are to be mass-produced in one of Britain's largest motor car factories.

The size and shape of a portable gramophone, each of them weighs only thirty pounds and they will replace the cumbersome gas cylinders at present used. The Libyan sand was used to test resistance to penetration in sandstorms. The machines are also completely vermin-proof.

In hot climates, where anesthetics evaporate very rapidly, one can never be sure, with the usual methods, how much the patient has absorbed. The portable machine provides complete control of dosage; moreover, it enables one anesthetist to take part in several operations. The first two hundred of these machines will go to Britain's Royal Air Force, after which the fighting services and the civil defense organizations will each have their allocation.

Pruritus: Its Cause and Treatment

(*Continued from page 364*)

and a good state of general health. Eosinophils are also found in the serum of the bullæ and vesicles, when present. The disease is often refractory in its response to treatment, and suberythema doses of ultraviolet light as a general body bath is indicated together with arsenic in the form of Asiatic pill or Fowler's solution by mouth, or sodium cacodylate by injection. Liver extract, calcium gluconate and autohemotherapy has also been used with benefit in some of these cases.

Lymphoblastomas

The lymphoblastomas (12) represent a group of neoplasmas originating in the hematopoietic and reticular tissues. The various types are closely related, and transitions from one into another have been reported. The forms are those enumerated on the chart, and this group is often spoken of as the white blood cell dyscrasias, and are often associated with varied types of skin lesions and a very severe type of generalized pruritus. The cutaneous phenomena may be of generalized character, and range from the erythema multiforme type of lesions to exfoliative dermatitis. When a patient is seen with chronic intractable pruritus and a nondescript multiforme type of eruption on the skin, or an associated generalized exfoliative dermatitis, it is important to examine the blood to rule out any evidence of increase or change in the white blood cells. One should also carefully examine for adenopathy in such a case, and remove a gland for histological study, and the results of these examinations will usually place the case in the proper classification. The prognosis in most of these entities is grave, and treatment, as a rule, only palliative.

Cutaneous Neuroses

The rôle of the psyche has been receiving attention by the dermatologists as well as the internist, and the psychoneurogenic reactions of the skin have been discussed by many writers (9), (13). Neurotic excoriations (14) are asymmetrical eruptions produced voluntarily by the patient who is seized with an uncontrolled desire to scratch or injure his skin, and the cutaneous eruption may vary from a simple scratch mark to a coin-sized excoriation or ulceration. These patients usually present stigmata of hysteria, e.g., decrease of the corneal and pharyngeal reflexes with geometrical areas of hyperesthesia and hypoesthesia. Many of the individual lesions sometimes exhibit a wedge-shaped form from implantation of a finger nail in the skin together with a linear excoriation extending from this wedge point, and this should make one suspicious of a factitious dermatitis. The cooperation of the patient, after a full discussion in a sympathetic manner, of the nature of the eruption, and the use of antipruritic lotions are advisable. Bromides and thyroid (14) are also of aid in the treatment of these cases. Intractable cases may require psychiatric care.

Factitious dermatitis artefacta is an artificial dermatosis produced by the patient by scratching or digging into the skin or burning the skin with chemicals or some mechanical means to obtain sympathy. In this connection, I should like to relate briefly the history of a patient who came under my care some years ago.

A girl in the early twenties, from Kentucky, was employed as a nurse maid in the home of a dentist in a Chicago suburb. She enjoyed her new surroundings very much, and liked living in the Chicago region much better than in the small community from which she came. After a reprimand for inefficiency her employer indicated that she might have to send her home, and this disturbed the girl since she did not want to return home. She retired to the attic of the house in which she was employed to meditate over her plight. Her eyes struck a can of drano on an attic shelf, and she thought that if she could feign illness her employers would certainly not send her away if she was not well. She accordingly moistened the drano and applied it to scattered areas on her skin with resultant superficial ulceration, and presented herself at the skin clinic for advice and treatment, where I saw her. The bizarre character of the lesions, the elongated droplet-like formations where the caustic liquid had run over the side of the thigh, over the iliac crests, were "telltale," and when this patient was confronted with the fact that these lesions may have been produced by herself, she readily admitted the conflict in her life, and the reason for producing the lesions.

This case was handled relatively simply with psychiatric aid. Many, however, are much more complicated and acquire long patient psychiatric handling to run down the cause and obtain a good therapeutic result.

Localized Pruritus

Pruritus ani is probably the most common of the conditions producing localized itching, and may be an exceedingly distressing and embarrassing ailment. Its causes are varied and I list below a number of the important causal factors.

Inside the anus: Proctitis with leakage of mucus; patulous sphincter with leakage of mucus; hemorrhoids; polypi; fissure; fistula; threadworms; constipation; diarrhea; leakage of paraffin.

Outside the anus: Pediculosis pubis; lack of cleanliness; excessive perspiration; hemorrhoids.

Condylomata acuminata; tinea or monilia of natal cleft; psoriasis of natal cleft; eczema of natal cleft; seborrheic dermatitis; vaginal discharge keeping anus moist.

Pruritus vulvæ is not uncommon, and the itching may be severe and cause the patient considerable discomfort. Among the causal factors are: Vaginal discharge due to Trichomonas infection, endocervicitis or Neisserian infection; vulvar warts; condylomata; glycosuria; threadworms; pediculosis pubis; tinea or Monilia of vulva; intertrigo of vulva; psoriasis of vulva; eczema of vulva; seborrheic dermatitis of vulva; leucoplakia and senile changes.

In the treatment of localized pruritus it is important to establish any of the causal factors enumerated above and then treat appropriately and conservatively by local, systemic, or surgical measures, as indicated. In pruritus vulvæ, occurring during or after the menopause, the use of estrogens by intramuscular injection, or by mouth, is an excellent form of therapy. In senile women with intractable pruritus, and leukoplakic changes, vulvectomy may have to be considered as a treatment of choice when all conservative measures fail to give relief.

Summary

An attempt has been made to give a perspective, with the aid of tabulation of a number of cutaneous entities that must be considered in any case of generalized pruritus, with brief allusion to pruritus ani and vulvæ as examples of important forms of localized pruritus. The signal points in differential diagnosis have been briefly discussed. Therapeutic comments have been brief since it is felt that after the differential diagnosis of a pruritic eruption has once been established, and the entity classified, one can refer to any dermatological text book or a therapeutic text (10) for more detailed treatment information.

From this discussion the physician will recognize that a patient with pruritus who presents cutaneous signs is suffering with a skin entity of exogenous origin or varied internal origin. If the pruritus is the cutaneous expression of systemic disease, it then behooves him to use his diagnostic resourcefulness to "run down" the cause of the itching by proper clinical and laboratory examination of the patient.

Bibliography

1. ROTHMAN, STEPHAN: Physiology of itching. *Physiological Reviews,* 21:357
2. HAFFENREFFER: quoted by (1).
3a. GREENWOOD, A. M.: Twenty-four hour treatment with Danish ointment, *J.A.M.A.* 82:466, 1924.
3b. Danish ointment prepared by the Tilden Company, St. Louis, Missouri.
4. COLE, H. N.: Eczema or dermatitis; the problem of hypersusceptibility, *J.A.M.A.* 98:1521.
5a. SCHWARTZ, LOUIS: Allergic occupational dermatoses, *Jour. Allergy* 11:318 (March) 1940.
5b. SCHWARTZ, LOUIS and TULIPAN, LOUIS: *Text Book of Occupational Diseases of the Skin,* Lea & Febiger, 1939.
6. SULZBERGER, M. B.: Contact type eczematous dermatitis, *Jour. Allergy* 11:40 (Nov.) 1939.
7. WIEN, M. S.: Toxic Dermatosis (with discussion on drug eruptions) *Med. Clin. N. A.* (Jan.) 1942.
8. ROWE, A. H.: *Elimination Diets and the Patient's Allergies,* Lea & Febiger, Phil. 1941.
9. STOKES, J. H., KULCHAR, G. V. and PILLSBURY, D. M.: Etiological background of urticaria, with special reference to psychoneurogenous factor, *Arch. Dermat. & Syph.* 31:470, 1935.
10. SULZBERGER, M. and WOLF, J.: *Dermatologic Therapy in General Practice,* Year Book Publishers, Chicago, 1940.
11. FORESTER, H.: Roentgenotherapy of spinal region, *Arch. Dermat. & Syph.* 25:256, 1932.
12. KEIM, H. L.: Lymphoblastomas and their interrelationship, *Arch. Dermat. & Syph.* 19:533, 1929.
13. STOKES, J. H.: Psychoneurogenous reactions of the skin, *Arch. Dermat. & Syph.* 42:780 (Nov.) 1940.
14. GOLDBLATT, S. and GORDON, W. T.: Factitial skin injuries (neurotic excoriations), *Jour. Med.* Cin., Ohio, Jan. 1941.
15. HOLLANDER, L. and VOGEL, H. R.: Testosterone propionate in treatment of male postclimacteric dermatoses, *Arch. Dermat. & Syph.* 45:356 (Feb.) 1942.

Treatment of Compound Fractures

The closed plaster treatment of compound fractures is one of the most valuable surgical developments of the present war, says the *Roche Review* (June 1942) in a comprehensive article on war wounds. It has been estimated, the author continues, that five to eight percent of all wounds suffered in action are compound fractures, which, in the majority of cases, involve one or more of the extremities. Primary treatment generally consists of adequate temporary immobilization to prevent further damage to soft tissues, and treatment of the accompanying hemorrhage, pain, and shock. A sulfa drug may be sprinkled liberally into the wound before the temporary dressing and splint are applied.

News Items

American Urological Association.—The Western Section of the American Urological Association held its twentieth annual convention at Del Monte, California, June 22d, 23d, and 24th, under the presidency of Dr. Albert M. Meads, of Oakland, Calif.

American Medical Association Elections.—Dr. James E. Paullin, of Atlanta, Ga., was named president-elect of the American Medical Association at the ninety-third annual meeting, held last month in Atlantic City, N. J. He will take office as president in 1943. Dr. Fred W. Rankin, of Lexington, Ky., was installed as the 1942 president, Dr. W. Carrington, of Atlantic City, was elected vice-president and Dr. Edward M. Pallette, of Los Angeles, was elected a trustee. Next year's meeting will be held in San Francisco and the 1944 meeting is scheduled to be held in St. Louis and the 1945 meeting in New York.

Foreign Health Relations.—On April 7th, the Surgeon General of the United States Public Health Service established in the Division of Foreign and Insular Quarantine a Section on Foreign Health Relations, according to *Military Surgeon,* June, 1942. Medical director C. V. Akin is in charge of the section. His function is to establish and maintain liaison with the Department of State, the Pan American Sanitary Bureau, the Offices of the Surgeons General of the Army and Navy, and other agencies concerned, "for the proper collection and routing of information on foreign health and medical problems, including information on bacteriological warfare".

Garvan Gold Medal.—The Francis P. Garvan Gold Medal was awarded to Dr. Florence B. Seibert, associate professor of biochemistry at the Henry Phipps Institute of the University of Pennsylvania. The medal will be presented to Dr. Seibert for distinguished work on the chemistry of tuberculosis at the one hundred and fourth national meeting of the society in Buffalo, September 7th to 11th. Dr. Seibert, a graduate of Yale University, received the Ricketts Prize in 1924, and the Trudeau Medal in 1938.

Illinois Neuropsychiatric Institute.—The Illinois Neuropsychiatric Institute, Chicago, was formally dedicated on June 6th, with Dr. Harry R. Hoffman presiding. The principal address was delivered by Dr. Edward A. Strecker, professor and head of the department of psychiatry, University of Pennsylvania School of Medicine, Philadelphia, his subject being Neuropsychiatric Perspectives. Dr. Francis J. Gerty has been appointed director of the psychiatric division and Dr. Eric Oldberg as director of the neurological and neurosurgical division of the Institute.

Ohio State Medical Society.—The ninety-sixth annual meeting of the Ohio State Medical Society, held in Columbus, April 28th, 29th, and 30th, was an outstanding success. A fine program was presented which included addresses by eleven guest speakers, all nationally renowned in their respective fields. Two innovations on the program which evoked favorable comment were quiz discussion sessions and the medical motion pictures which were shown. Dr. Edward J. McCormick, of Toledo, was installed as president, succeeding Dr. Harry V. Paryzek, of Cleveland. Dr. C. C. Sherburne, of Columbus, was named president-elect.

Personal.—Dr. Alfred Walker has been appointed chairman of the Dentists Division of the New York fund-raising campaign of Russian War Relief, Inc., and is completing organization of a committee which will conduct an intensive campaign for contributions from all parts of the dentists division.

Dr. Ludvig Hektoen, chairman of the Advisory Committee of the National Cancer Institute, received the fifth annual distinguished service award of the American Medical Association at the Atlantic City meeting.

Dr. Fred W. Rankin, Lexington, Ky., retired as a member of the Medical Advisory Board of the Office of Civilian Defense upon being called to active service in the Office of the Surgeon General of the Army. Dr. John T. O'Rourke, dean of the University of Louisville School of Dentistry, Louisville, Ky., has been designated to fill the vacancy on the Board.

Dr. Vannevar Bush, president of the Carnegie Institution of Washington and director of the Office of Scientific Research and Development, was given the degree of LL.D. at the annual commencement exercises of the University of Pennsylvania.

Dr. J. B. Collip, head of the department of biochemistry of McGill University, Montreal, was recently elected president of the Royal Society of Canada.

Dr. Alfred C. Reed has resigned as professor of tropical medicine at the University of California, and has become associate clinical professor of medicine at the Stanford University Medical School.

Dr. Charles Armstrong of the United States Public Health Service delivered the annual Kober Lecture on May 5th, his subject being Recent Developments in Neurotropic Virus Diseases. This lecture was endowed by Dr. George M. Kober, former dean of the medical school of Georgetown University.

Edgar Douglas Adrian, professor of psychology at Cambridge University, England, received the award of merit on the occasion of King George VI's birthday. Professor Adrian, a specialist in diseases of the brain and nervous system, was the winner of the Nobel Prize in Medicine for 1932.

Dr. Henry Mann Silvers, New York University's oldest graduate, took part in the commencement exercises on June 10th. Dr. Silver was born in 1851 and graduated from the College of Medicine in 1875.

Dr. Victor H. Vogel, passed assistant surgeon of the U. S. Public Health Service, Washington, D. C., has joined the staff of the Medical Division, Office of Civilian Defense.

Dr. Dean A. Clark, surgeon, Reserve Corps, U. S. Public Health Service, has been appointed head of a hospital section organized in the Medical Division of the Office of Civilian Defense which is to carry out the new hospital program recently announced and also at the head of the new Emergency Medical Section of the Public Health Service.

Lewis H. Carris, director emeritus of the National Society for the Prevention of Blindness, has been awarded the Leslie Dana Gold Medal for "outstanding achievements in the prevention of blindness and the conservation of vision."

Dr. Langley Porter, dean emeritus of the School of Medicine of the University of California, was given the honorary degree of doctor of laws at the annual commencement of the University.

Work for the Physically Handicapped.—A steadily growing army of physically handicapped men and women is taking its place in war production, according to the chairman of the War Manpower Commission. In April, the United States employment offices made more than 7,500 placements of handicapped workers, 1,700 in New York, 1,100 in Illinois, 860 in Texas, and 670 in Michigan. Job opportunities for the physically handicapped are expanding rapidly under the impetus of the war program, but complete utilization of the skills and talents of these people has not been reached. Latest U. S. Employment Service figures show that there are still approximately four hundred thousand disabled persons registered at the public employment offices.

Yale Alumni in Medicine.—At the annual meeting of the Association of Yale Alumni in Medicine, held on June 9th, officers were elected as follows: President, Dr. Paul Titus, of Pittsburgh; vice-presidents, Dr. Robert L. Rowley, of Waterbury, Conn.; Dr. Clement F. Batelli, of New Haven; Dr. Norman E. Freeman, of Philadelphia; Dr. Lee E. Farr, of Wilmington, Del., and Dr. Charles F. Scholhamer, of West Haven, Conn. Dr. Marion B. Leonard-Robbins, of New Haven, was elected secretary and treasurer. Dr. Francis J. Blake, dean of the Yale School of Medicine, reported the establishment of the Reuben H. Donnelly Scholarship Fund to aid first or second year medical students, and a grant of $20,000 from the W. K. Kellogg Foundation to be used in loans and scholarships for medical and public health students.

Medical and Surgical Relief.—Supplies valued at $10,240.64 were furnished during the month of May to emergency medical services, first aid posts, needy hospitals, and other recognized relief agencies in America and allied nations by the Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York, N. Y., according to an announcement by Dr. Joseph P. Hoguet, National Medical Director. The shipments included forty-one emergency medical field sets, eleven cases of assorted instruments, thirty-one cases of medical supplies, and quantities of vitamin tablets and concentrated foods. Among the beneficiaries were the British Red Cross, the Royal Norwegian Overseas Forces, the Free French Forces in St. Pierre and in Brazzaville, Africa, relief agencies in East Africa and the Netherlands Indies, Russia, the American Forces in Iceland and a number of relief agencies.

Grants for the Establishment of Blood and Plasma Banks.—Regulations for the administration of the Blood and Plasma Bank Program of the Medical Division of the United States Office of Civilian Defense have now been prescribed, and funds are available for grants to assist approved hospitals in establishing blood and plasma banks. Only hospitals within three hundred miles of the Atlantic, Pacific or Gulf coasts are eligible for such grants. After July 1, 1942, these geographical restrictions may be modified, so that grants may be made to inland hospitals. Applications should be addressed to the Chief Medical Officer, United States Office of Civilian Defense, Washington, D. C. The Red Cross has established eighteen donor centers in various parts of the country which are successful in obtaining an adequate supply of blood donors for military purposes.

Americans and Britons Become Honorary Members of Russian Academy of Science.—It was recently announced that the Russian Academy of Science, Moscow, has elected to honorary membership three Americans and two Britons as follows: The Americans are Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard Medical School, Boston; Ernest O. Lawrence, Ph.D., professor of physics and director of the Radiation Laboratory, University of California, Berkeley, and Gilbert Newton Lewis, Ph.D., since 1912 professor of chemistry and dean of the college of chemistry at the University of California. The Britons are Sir Henry H. Dale, M.D., physiologist, and John B. S. Haldane, F.R.S., professor of biometry, University College, London.

Alpha Epsilon Delta Convention.—The seventh biennial convention of Alpha Epsilon Delta, honorary premedical fraternity, was held recently at the West Virginia University, Morgantown. Twenty-eight of the thirty-two active chapters were represented at the convention. The rôle of the premedical student in the present emergency was among the more important questions discussed and the convention recorded the opinion that all premedical students should be urged to complete their college work in order to begin the study of medicine and make their training available to the country as soon as possible. Dr. Andrew E. Amick, of Charleston, W. Va., spoke on Medicine and the State and Dr. Francis P. DeLancy, of Morgantown, delivered an address on Medical Licensure. At the convention banquet Dr. Frederick E. Keller of the Anderson Hospital, Philadelphia, Pa., was the principal speaker, his subject being The Idealists in Medicine. The following national officers were elected: President, Dr. Warren H. Steinbach, Department of Chemistry, University of Arkansas; vice-president, Dr. H. E. Setterfield, Department of Anatomy, Ohio State University; secretary-historian, Dr. Maurice L. Moore, Medical-Research Division, Sharp and Dohme, Glenolden, Pa.; treasurer, Dr. Norman F. Witt, University of Colorado; councilor, Dr. Emmett B. Carmichael, University of Alabama.

A New Special Journal

The first number of the *Quarterly Review of Otorhinolaryngology*, dated March 1942, has just come to this reviewer's desk. The editor in chief is Dr. Chevalier L. Jackson, of Philadelphia, who with his father has so long been pre-eminent in "direct tube work" in the lower airways. No "staff names" are mentioned, therefore it would seem that full responsibility for the success of this new venture rests upon Dr. Jackson's capable shoulders. The new magazine is seven by ten inches in size and looks very attractive in its orange and blue cover. The paper is of excellent quality, an "off white" shade. The illustrations are in the conventional pattern, none colored, but some of them resemble engravings, particularly those of the ear on page 12. Economy of space has been secured by reducing the size of pictures so that as many as seven may be found on one page. There is also an economy of words, few abstracts require a full page, and two or even three may be found on one page without any appearance of crowding. The type is easy to read.

In his foreword, Dr. Jackson says that, while there are several good monthly and annual reviews, there is no quarterly which covers the entire field of otorhinolaryngology. It is appropriate that a review of this kind be published in Washington because of the many fine libraries there, and many experienced abstractors of all languages. It is especially desired at this time to cull as much as possible from the Mexican, Cuban and South American periodicals. Material is limited at the beginning to otology, rhinology and laryngology. Later on bronchology and esophagology will be added. There is a subject index, also an authors' index, preceded by material headed "General" which considers such subjects as ascorbic acid therapy, vitamin D, relation of general medicine to OALR, the sulfonamides, salivary glands, extrapulmonary tuberculosis, and "What the OALR Specialist Expects of the Anesthetist." The MEDICAL RECORD wishes long life and wide and significant service for this new special journal.

PHYSICIANS' LETTERS

SOLOMON R. KAGAN
Roxbury, Mass.

Some physicians' letters are of great interest to the medical profession. They convey historical data concerning medical life, may serve as authoritative material for the biography of the authors, and may also have a literary value through their lucid style and skill.

I am publishing here several letters of great American and European physicians who were active in medical life and have made important scientific contributions to medical literature. These letters are interesting not only for their content but also for the form of their expression. They are given here for the first time.

* * *

From Sir Thomas Clifford Allbutt (1836-1925), former regius professor of physic at the University of Cambridge, England, to Col. Fielding Hudson Garrison, of Washington, D. C.

St. Rhadegund's, Cambridge
Dec. 7, 1909

Dear Sir:

I have only just now found time to read the two pamphlets you kindly sent to me some time ago. I have found both most interesting . . .

May I mention to express my admiration of the able way in which you have presented a most difficult subject in both.

Sincerely,
CLIFFORD ALLBUTT

* * *

From Dr. Henry Barton Jacobs, of Baltimore (1858-1940) to Col. Fielding H. Garrison.

11 Mt. Vernon Place, W.
1. March 1921

Dear Garrison,

I am perfectly delighted with your Anthology, and want to thank you and Casey Wood most sincerely for thinking of me.

Your "Foreword" is charming, and the selection so far as I have gone are most worthy and interesting.

It was a happy thought of yours to do it for the "Chief's" birthday and I am sure he appreciated the thought and the idea almost as much as if he had seen the book itself.

I am particularly pleased to see that you have included Thayer's tribute to Osler. It's very fine and so true.

The Welch book will now soon be out. Dr. Halsted is inquiring who is best to bind the presentation copy for Dr. Welch. Have you a suggestion?

With kindest regards and warmest thanks,

Very sincerely yours,
HENRY BARTON JACOBS

* * *

From Sir Humphry Rolleston, former regius professor of physic at the University of Oxford, England, to Colonel Fielding H. Garrison.

27. X. 27

Dear Dr. Garrison,

I have just read with an enormous amount of pleasure your two philosophical essays on "Constitution and Characterology" and "Protein Therapy", and am very grateful to you for sending them to me.

Have you written anything, from which I could borrow, on the "constitutional and familial blood diseases of lues," subjects on which I am trying to collect the thoughts of others? I am afraid it may appear that this is part of my gratitude! But it is not all of such base metal.

Yours v. sincerely,
H. ROLLESTON

* * *

From Dr. Ephraim Cutter, of Philadelphia, to Dr. Jacob da Silva Solis-Cohen:

123 Baylston Street
Oct. 29, 1868

Dear Dr.

I have succeeded in throwing an image of my larynx on a screen, but this difficulty arises in that sunlight is not intense enough. According to the recommendation of Mr. Tolles, our eminent microscope maker, I used the lenses of a common camera of the photographer reversing them so that the focus of the lenses was placed in the laryngeal mirror in situ and the image thrown onto a screen placed opposite. I have queried whether to try the electric, magnesium or oxyhydrogen blow pipe lights. Tolles says that if sunlight won't give light enough no other illumination will be sufficient. Another question arises as to how much would be the gain to accomplish this result. I don't feel like spending a large amount in getting up instruments at a venture. Tolles thinks he can get up something which will answer but the expense is great. However I will strive on. Please let me hear from you if but a word.

Very respectfully yours
EPHRAIM CUTTER

* * *

From Dr. Harrison Allen, noted Philadelphian surgeon to Dr. Jacob da Silva Solis-Cohen.

1109 Arch St.
Phila. March 17th, 1874.

My Dear Dr.

I am anxious to know of some cases of cartilaginous and colloid tumors of the nasal septum you allude to in your work on diseases of the throat. Do you remember where any cases are recorded?

By answering this query
You will oblige

Yours sincerely
HARRISON ALLEN

From Dr. William H. Pancoast, eminent Philadelphian physician, to Dr. Jacob da Silva Solis-Cohen.

Dec. 11th, 1875

My dear Cohen,

Pray accept the accompanying box of cigars, which Stead says, are Havana and of your strength. I hope they may prove so, and that this slight token of my friendly regard for you, may return even in a slight degree, the kindness and satisfaction that your skill has afforded me, in your comfortable office.

Very sincerely yrs
WM. H. PANCOAST
1100 Walnut St.

* * *

From Dr. Arpad G. Gerster, of New York City, surgeon to Mount Sinai Hospital, to Colonel Fielding H. Garrison.

New York, Nov. 23, 1921.

My dear Doctor Garrison,

I beg to be permitted to express my thanks for the pleasure derived from reading your article in the *Musical Quarterly* on "Medical Men who loved music".

Of New Yorkers of my younger days there was Henry B. Sands, an excellent pianist (originally a professional for he taught music before he studied medicine), in whose home, for many years, there was chamber music every Sunday (in winter time). After his death the same club met at Dr. Charles Knight's house till his illness brought on a cessation of their delightful meetings, where the Damreather quartette held forth.

Another prominent surgeon was old Thomas Markoe, who himself plays the fiddle in his own quartette, together with his son Frank (brother of Jim shot in church by a paranoic two years ago).

Of the present generation may be mentioned Mandlebaum, pathologist of Mt. Sinai Hospital, an excellent violinist, in whose house quartette music is cultivated by medical men. D. Davison (visiting physician of Mt. Sinai) and Dr. Abraham Garbat, both excellent fiddlers play in this combination. In my own house a string quartette used to meet for about twenty years once a month during winter. Dr. Fred Kammerer the surgeon was our cellist, and Dr. Felix Cohn, throat man, the viola player, also belonged to this *quatrefenil,* till death and other accidents led to the scattering of the club. Our second violinist was Alfred L. Donaldson, author of the recently published *History of the Adirondacks.* Since then, that is, since about twelve or fourteen years, my wife has a lady pianists' club meet every month at our house. It consists of twelve ladies, all of whom are musicians above the average, who bring new things to every meeting, doing excellent work.

I will mention another medical music lover, Dr. Fred. Zinsser (uncle of Hans Zinsser the bacteriologist of the P & S), whose close friendship with Theodore Thomas reminds one of that between Billroth and Brahms. When he retired from practise (after his fiftieth year) to live in Wiesbaden, he took up the violin and within a year mastered the difficulties of this most difficult instrument sufficiently to read music prima sista, and to fill with credit the place of second violin in quartette music.

Once more many thanks and greetings from

ARPAD G. GERSTER.

Book Reviews

Minor Surgery

Surgery of the Ambulatory Patient. By L. KRAEER FERGUSON, A.B., M.D., F.A.C.S., Lieut. Commander, Medical Corps, United States Naval Reserve; assistant professor of surgery, University of Pennsylvania. With a section on fractures by LOUIS KAPLAN, A.B., M.D., F.A.C.S., associate in surgery, University of Pennsylvania. With 645 illustrations. Philadelphia, London, Montreal: J. B. Lippincott Company, 1942. Pp. 923. Price $10.00.

In other days this kind of work was known as minor surgery, and it referred to office and out-patient practice. No subject is mentioned in this book which cannot be treated in a walking patient. There are three divisions: the first is a *general overlook* of the field including equipment, selection of patients, furniture, preparation of supplies, anesthesia, dressings, bandages and postoperative management, the care of boils, open wounds, bites—black widow spider and others, burns, foreign bodies, frost-bite, cysts and tumors. The second part covers *regional surgery* of the head, neck, abdomen, back, chest, breast, perineum, upper and lower extremities and their subdivisions. Part three deals with *fractures and dislocations* which do not compel confinement to bed. It takes up about two hundred pages, and is sufficiently detailed and comprehensive for the purposes of the general practitioner.

Two conditions which are of interest are low back pain, and painful heel which so often plague and baffle the general physician. Concerning low back pain, the author says the factors producing it are "probably more confusing than any other surgical lesion". He then proceeds to try to clear up this confusion by means of illustrations and diagrams and succeeds to a great extent in doing so. Painful heel in children is due to "apophysitis" which can be shown by a picture taken in the region of the calcaneal epiphysis. In adults a calcaneal spur may be the cause, but sometimes a bursitis or painful tension of the plantar fascia or flexor digitorum brevis is to be found. The pathology is comparable to that found in "tennis elbow". This is a practical book for everyday use, and may well help to solve a knotty problem in those patients whose symptoms outweigh determinable signs.

Clinical Parasitology

Textbook of Clinical Parasitology. Including laboratory identification and technic. By DAVID L. BELDING, M.D., professor of bacteriology and experimental pathology, Boston University School of Medicine. New York and London: D. Appleton-Century Company, Inc., 1942. Pp. 888. Price $8.50.

This timely contribution is an outgrowth of a manual of human parasitology. In its present form the book is designed not only for practitioners but for public health officials and medical personnel in the armed services. It describes the protozoan, helminthic and arthropod parasites of man as a basis for the diagnosis, treatment and prevention of the diseases which they produce. The war focuses so much attention on control of parasitic diseases among military forces that this aspect of medicine is receiving increased consideration in modern medicine. Although the scope is extensive, the subject matter has been simplified for clinical application. Diagnostic procedures are clarified by a clever arrangement of parasites in tables and keys, grouping allied parasites according to their pathological activities and correlating these with pertinent clinical ramifications. Once the diagnosis is clinched, modern methods of treatment are given for each parasite. There is considerable emphasis upon life cycles and modes of transmission because of their current rôle in preventing medicine. The text is clarified by diagrammatic illustrations correlating the life cycle of the parasite with its human host. The content is divided into general parasitology, protozoa, round worms, tapeworms, flukes, arthropoda and finally a chapter devoted to the method of diagnosis and treatment of parasitic infections. Perusal of the book will convince physicians of the great help available for them in this handbook when any question on parasitology arises in practice at home or in military service.

Nutrition of Infants and Children

Heredity, Food, and Environment in the Nutrition of Infants and Children. By GEORGE DOW SCOTT, A.B., B.S., M.D., Fellow of the New York Academy of Medicine, and consulting pediatrician to the Lutheran Hospital. New York City. Boston: Chapman and Grimes, Inc., 1942. Pp. 778. Price $5.00.

A clear conception of foods, of their nutrients, and of their behavior in the body is of paramount importance, and an acquisition of their knowledge will lead to far-reaching and amazing results. That the average person possesses but a rudimentary and often fragmentary understanding of the principles underlying nutrition, is evidenced by the lack of discretion shown in the selection and preparation of foods and in the poor judgment employed in serving them at the proper time. Because of the traditional credulity on the part of the public, innovations in the form of "popular foods" and infant food formulæ are accepted without challenge. The public is not wholly at fault, for certain medical schools and other institutions, as well as many books and periodicals dealing with foods and their chemistry, have failed to include in their curricula and pages a broad understanding of nutrition and of the physical, psychic, and other environmental factors which contribute to it. The transmission of variants, modifications, variations and mutations, traits, etc., and the effects of hybridization, inbreeding, and cross breeding tend to change, upset, and modify disease types and add to the growing organism dysfunction and potentialities, often different from those of the parental and ancestral stock. Many characteristics overlap, making diagnosis obscure and treatment and prognosis often difficult. In the breeding of animals, heredity, the inheritance of potentialities, traits, and other characteristics, as well as nutrition and environment, are taken seriously into consideration. No such measures have been undertaken in the same systematic manner in the breeding, nutrition, and rearing of children. Indeed there is a tendency to study infant nutrition from the viewpoint of foods alone, to feed infants and children in groups rather than individually, and to follow blindly inconclusive theories and inexperienced leaders rather than to work out nutritional problems from research and observation.

This book gives sufficient knowledge of the fundamental principles of nutrition and of its motivation to provide an effectual groundwork for the preparation of rations suitable for the maintenance of health and the prevention and cure of nutritional disease in children.

Anesthesia

Endotracheal Anesthesia. By NOEL A. GILLESPIE, D.M., B.Ch., M.A. (Oxon.); D.A. (R.C.S. Eng.), research associate and resident in anesthesia, University of Wisconsin. Madison: The University of Wisconsin Press, 1941. Pp. 187. Price $4.00.

In this thin little volume, the author, who has spent most of his professional life in the hospitals of London, England, has epitomized many years of sound experience in producing general narcosis via the trachea. It is amazing to read that intubation of the trachea is older than anesthesia itself. In 1542, Vesalius passed a reed into the *aspera arteria* of an animal and blew into it intermittently, incidentally making a study of what we now call ventricular fibrillation! The first twenty-five pages of the book take up the "history" of tubal anesthesia, followed by the advantages and disadvantages of the method. Apparatus and technique are then described, also the "practical applications" of endotracheal anesthesia. The final chapter names the uses of intubation other than for narcosis. At the end of each chapter there are abundant references, and, independent of these, there is a bibliography at the end of the book.

This "boiling down" of an enormous amount of data has, of course, certain disadvantages which is true of all "outlines", but here is enough substance, if thoroughly chewed and digested, to make a background for the beginner or the occasional anesthetist so that he will have the confidence born of knowledge when he must take any human being into "the valley of the shadow". A small pocket-size book of this kind is most welcome at this particular time to the physician who is entering the service of his country.

Medicine from a Layman's Viewpoint

The Advancing Front of Medicine. By GEORGE W. GRAY. New York, London: Whittlesey House, McGraw-Hill Book Company, Inc., 1941. Pp. 425. Price $3.00.

Mr. Gray is neither a physician nor a scientist. He is a native of Texas, a graduate of Harvard, and a "scientific reporter". In these days it seems that the most readable books concerning "medicine" are written from the popular viewpoint by "lay persons" who specialize in this difficult field, and most of whom do it amazingly well. Not only is a wide reading required, but also a selective mind which is capable of grasping "main objectives" and setting them down in accurate and discursive form. Mr. Gray's book is one of the best of its kind yet written. It is comprehensive, sufficiently detailed, and absorbingly interesting. Beginning with the science of man and the nature of disease, we are introduced to the aptitudes of the body, the five ailments, and the sea we live in. Then follow chapters on high blood pressure, sulfanilamide, influenza, allergy, brain storms, sleep, pain, smoke, drink, aging, and cancer. Concerning high blood pressure, drugs are valuable only in that they quiet the emotions, rest the mind, secure sleep, reduce worry. If harmony and calm can be secured in daily life, the blood pressure may "go down" amazingly.

In the last forty years, medicine has advanced along three lines: 1, better knowledge and control of the infectious diseases; 2, a study of the seven glands of the endocrine system as related to metabolism; 3, an increasing understanding of deficiency disorders and their relation to vitamins.

Sulfanilamide is of very great value in infections, but not so helpful in "virus diseases," such as measles and influenza. Gonorrhea can be cured in almost eighty-five percent of all cases by the sulfa drugs, according to Public Health statements. Already, there are some two thousand sulfa derivatives, and the permutations and combinations seem limitless, synthetically. At any rate, these sulfa drugs which have been proved of great clinical value work miracles in many instances and are saving countless lives.

Biochemistry

Principles of Biochemistry. By ALBERT P. MATHEWS, Andrew Carnegie Professor of Biochemistry, University of Cincinnati, Cincinnati, Ohio. Baltimore: William Wood & Company, 1936. Pp 522. Price $4 00.

This introduction to biochemistry synthesizes the facts in the field so that they appear not as an inchoate assembly of facts but as a coordinated structure revealing the human body in its true functional rôle. While the chemistry and metabolism of glucids, lipids and proteins are presented in the classical but fascinating manner, over a third of the book is devoted to the chemistry of vital tissues, and to the catalytic agents of growth and development. After an interpretation of biochemistry and medicine, the author presents the rôle of various chemical compounds in health and in disease to the end that no organ of the body escapes the mechanistic concept of relating function to chemical content. The book is charmingly written and easily understood yet devoid of popular fantasies. It is authoritative, instructive and medical. No student or practitioner of medicine, who wants a bird's eye view of the chemistry of life, can afford to miss the principles of biochemistry expressed by Mathews.

Nutrition

Manual of Applied Nutrition. Baltimore, Maryland: The Johns Hopkins Hospital, January 1941.

The diets in this manual represent the standard prescriptions formulated by the medical staff of the hospital. Fortunately no attempt has been made to give diet lists since the success of diet therapy depends on fulfilling the diet requirements of the patient. Indeed, the dietary plan keeps all treatment simple, economical and practical so that the hospital patient can learn by example the dietary treatment he is to use after this period of hospitalization. The limited amount of material is only of benefit to the local hospital staff since it gives no variety of dietetic possibilities in the management of specific diseases.

Sex Life in Babylonia

Sex Life in Babylonia. By EDWIN W. HIRSCH, M.D. Chicago: Research Publications, 1941. Pp. 36. Price $2.00.

Dr. Hirsch has collected the usual and some of the unusual facts regarding the supposed sex life of the Babylonians and made an attempt to bring the sex fears of today in tune with the prohibitions and inhibitions (or lack of them) from the time of the ancients. By inference, he believes syphilis was known to the ancients. In fact, he makes a transition of chancre to the sign of the crab or cancer. Dr. Hirsch would have us believe with him the syphilitic primary sore is the only genital lesion having the hardness of the covering of the crab. Anyway, the title of this book of some forty pages is exciting, the text mildly enlightening.

Medical Milestones

A Memorable Half Century

The year 1942 is outstanding in the history of the Presbyterian Hospital in New York. It marks the fiftieth anniversary of the founding of one of the hospital's most important departments—the training school for nurses. This anniversary was celebrated at Maxwell Hall, Columbia-Presbyterian Medical Center, when the class of 1942 was awarded diplomas. The publication of two anniversary volumes marks further the school's achievements during a half century—*Essentials of Nursing* by Helen Young, director of nursing service, and some of her associates; and *History of the School of Nursing of the Presbyterian Hospital* by Eleanor Lee, assistant professor of nursing, College of Physicians and Surgeons.

The School of Nursing of the Presbyterian Hospital was New York City's fourth school of the kind, following closely upon the establishment of nurses' training schools at Bellevue, New York, and Post-Graduate Hospitals. After the fire in 1889, which destroyed all the original Presbyterian Hospital buildings except the dispensary and administration building, and with the completion of new buildings to replace the loss, the idea of adding a training school for nurses was born. This idea was kept alive through the ardent support of John S. Kennedy, president of the Board of Managers of the hospital, and Frederick Sturges, vice-president, who was appointed chairman of a new committee on training school plans. Through the interest and energy of these two men, in cooperation with Dr. C. Irving Fisher, superintendent of the hospital, the services were secured of Anna Caroline Maxwell—a name in the annals of nursing second to none save that of Florence Nightingale. Miss Maxwell completed the organization of the new school, and it was opened in May 1892.

The courses offered included two years' instruction and practice in medical, surgical and obstetrical nursing. Later, experience in the nursing of contagious diseases was added. Miss Lee in her history of the school's progress traces the steps by which the Presbyterian Hospital training school mounted from comparatively small and scant beginnings to the status of a full-fledged university project—for today the School of Nursing is the Department of Nursing of Columbia University, enjoying that autonomy, educational independence, and unity which every major department of the university possesses. Under this arrangement the basic course in nursing has become a part of a larger educational plan designed not only as a sound preparation for bedside nursing, but also as a foundation for advanced training in the fields of public health, school, industrial and hospital nursing, nursing school administration, and other phases of nursing practice and education.

What were the outstanding accomplishments of the school during this half century of its progress? Here are a few, other than the development of the curriculum and other technical advances for which this brief sketch has no space.

Nurses from the Presbyterian Hospital training school played an important part during the Spanish-American War in the care and treatment of sick soldiers in the U. S. Army camps, especially during the typhoid epidemics that raged at Chickamauga Park and elsewhere. This marks an event in nursing history, for it was the first time that women had ever served in U. S. military hospitals. The innovation was brought about through the efforts of Miss Maxwell working in collaboration with the Red Cross Society for Maintenance of Trained Nurses, who presented to President McKinley, the Secretary of War, and Surgeon General of the Army Sternberg the advantages of permitting women nurses to serve in camp hospitals. That the innovation was a great success was amply demonstrated by the comments and letters of the government authorities.

With the establishment of the school and the broadening of the conception of nursing as an art and a science, came organization and other professional problems. An association of alumnae of the school was formed, and was incorporated in 1899 as "the Presbyterian Hospital Training School for Nurses in the City of New York," with constitution and by-laws, a pin and motto, "Labore et scientia." In 1900 a benefit fund for members of the Alumnae Association was established, a few years later the association's official publication, the *Quarterly Magazine,* made its appearance, and in 1912 a flourishing pension fund went into operation.

With the rise of social consciousness that marked the beginning of the twentieth century came emphasis on the part of welfare organizations and institutions upon betterment of the conditions of the sick, needy and unfortunate. The Presbyterian Hospital was one of the leaders of this new and active social spirit and was responsible for a number of innovations and many improvements in the living conditions of New York's underprivileged classes. Chief among the innovations was the organization and establishment of a visiting nursing service to operate in the homes of the needy. Another project was the building and maintenance of the "East River Homes," apartment houses for families with one tuberculous member. Both these activities came into being through the generous interest of Mrs. William K. Vanderbilt, Sr. Lesser but equally interesting projects were the conversion of the "Middletown," an old ferry boat, into a floating day-hospital for sufferers from tuberculosis, and the famous "Katie Geitz's Milk Kitchen" for undernourished children.

The work of the Presbyterian Hospital Unit during World War I is well known. Now, for the first time in history, women really "came into their own" as a military adjunct to the fighting forces. Miss Maxwell organized the nursing corps; her assistant, Mrs. Janet B. Christie of the class of 1898, was appointed chief nurse to the unit. Stationed at Etretat on the Normandy coast as U. S. Base Hospital No. 2, and Mobile Unit No. 2, which grew out of it, both brought relief and comfort to thousands of "dough boys" of all the Allied Nations. The personnel of the unit suffered two major casualties: Miss Beatrice MacDonald lost the sight of an eye during an air raid on the hospital, and Miss Amabel Scharff Roberts died from a virulent infection. A patient of the unit was Lieutenant Osler, son of Dr. William Osler, who died from shrapnel wounds. The Presbyterian contingent now serving in World War II numbers seventy-one nurses. In army service

"elsewhere" are twelve alumnæ of the School of Nursing. And so the banner is carried forward!

The nursing school at present is under the able directorship of Miss Helen Young, a graduate of the class of 1912. Miss Young, born in Canada of Scotch parentage, brought to her present position valuable preparation and experience, not only in the field of nursing, but also in teaching, organization and management. For two years she served as Miss Maxwell's assistant at Presbyterian, and with her was responsible for many developments and improvements in the school and its curriculum. Throughout her years of directorship Miss Young has maintained this spirit of progressiveness, openmindedness and high courage for attacking any problem, no matter how difficult; "We can do it," she says always. When, at commencement in 1937, President Nicholas Murray Butler awarded to her the Columbia University Medal for Excellence, his words were: "To Helen Young, in glad recognition of a quarter century of unselfish and untiring professional service of the highest character."

Medicoliterary Notes

Sir William Osler wrote: "William Beaumont was the pioneer physiologist of the United States and the first to make a contribution of enduring value." The life and work of this little known American surgeon of the early nineteenth century is described in a volume recently put out by Schuman, publisher of rare books and limited editions. The author is Dr. George Rosen, who throws new light upon Beaumont, especially upon the case of the "fistulous Alexis" operated on by Beaumont in the store of a fur trading settlement at Fort Mackinac in 1822, an operation and a case history which, according to the foreword of the volume by Dr. John F. Fulton, Yale physiologist, "was able to change the course of medical thought in the sphere of gastroenterology". The edition of the book is limited to five hundred copies.

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The article by Dr. Joseph D. Collins in *Annals of Surgery* for May 1942, on "A Method of Disposal of the Sac in Operations for Oblique Inguinal Hernia" is now available in reprint form. Dr. Collins' paper was read before the Southern Surgical Association at its meeting last December at Pinehurst, N. C.

* * *

Arthur Koestler's recently published book, *Dialogue with Death* (Macmillan), is a self-analysis of the author's feelings and thoughts during the Spanish Civil War, when he was imprisoned and sentenced to die. He lays bare all the miseries and petty excitements of prison life, describes the strange ups and downs of mood that fill days, weeks, months, and tells it all with a supreme awareness of the significance of things which comes only to one close to death. Koestler describes his reasons for writing the book as follows: "In the first place, the things which go on inside a condemned man's head have a certain psychological interest. Professional writers have rarely had an opportunity of studying these processes in the first person singular. In the second place, I believe that wars, in particular civil wars, consist of ten percent action, and ninety percent passive suffering. Thus this account of the hermetically sealed Andalusian mortuaries may perhaps bring closer to the reader the nature of the civil war than descriptions of battles."

* * *

Announcement has been made of the publication in July of the new textbook on Red Cross home nursing, which will replace the volume, several times revised, written in 1913 by Jane A. Delano and Isabel McIsaac. The new book has been prepared and brought up to date by Lona Trott, assistant director of health education of the Red Cross Nursing Service. The volume has four main divisions: Health and happiness in home life, How the community protects the health of home and family, How to take care of mother and baby, and What to do when sickness invades the home. The book has excellent illustrations.

* * *

An interesting and helpful study of the relationship between patient and physician forms the basis of the new book by Dr. Frederic Loomis, *The Bond Between Us*, a publication of Alfred A. Knopf. Dr. Loomis is author of the popular *Consultation Room*, published a few years ago, which brought him fame as "a woman's doctor" through his experiences and conclusions in the practice of gynecology and obstetrics. Dr. Loomis started life as an Alaskan miner who decided to give up manual labor and the wilderness to study medicine; that the venture was a great success no reader of Dr. Loomis' books will question.

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A recent publication of E. P. Dutton and Company is Brett Langstaff's *Dr. Bard of Hyde Park*, the biography of a famous physician of Revolutionary times who saved George Washington's life. Dr. Bard founded the first hospital in New York City, was the first president of the Medical and Agricultural Societies of Dutchess County, was dean of Columbia College during its early life, and trustee and secretary of New York City's first library.

* * *

The *Annual Report* of the Georgia Warm Springs Foundation, famous through the activities of our President, has just been issued. The report covers the fiscal year ended September 30th, 1941, and illustrates and reviews the work of the foundation during that period. In the foreword to the report contributed by President Roosevelt the statement is made that "it would be a mistake to think of the Foundation as just a hospital. It is all of that and more. During a pioneering period it has conducted many activities and dealt with many problems that do not confront a hospital in its customary routine. The conception . . . was an experiment in treating by hydrotherapy individuals who had been handicapped as a result of infantile paralysis, and in caring for them under certain psychological, climatic and geographical conditions not always present in the usual hospitalization of such patients. . ." However, since the institution's main aim is the treatment of the after-effects of infantile paralysis, medical care is of paramount importance and takes precedence over all other factors. With the completion of its Medical Building in 1939, the Georgia Warm Springs Foundation has been able to bring such care and treatment to a high state of excellence.

MEDICAL RECORD

A National Review of Medicine and Surgery, Established 1843

FORMERLY KNOWN AS THE MEDICAL JOURNAL AND RECORD

PUBLISHED MONTHLY BY
THE MEDICAL JOURNAL AND RECORD PUB. CO., INC.

Office of Publication: 210 Orchard Street, East Rutherford, N. J.
Editorial and Executive Offices: 70 Orange Street, Bloomfield, N. J.

GREGORY STRAGNELL, M.D. - - - - - *Editor*
A. M. MARLATT - - - - - *Assistant Editor*
N. F. HANF - - - - - - *Business Manager*
C. A. MCHALE - - - *Advertising Manager*

Subscription Price: Under Domestic Postage, $4; Foreign Postage, $4.75; Single Copies, 25 cents.

Remittance should be made by New York Exchange, post office, or express money order, payable to The Medical Journal and Record Publishing Company, Inc., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

MANUSCRIPTS

All material for publication should be sent to THE EDITOR of the MEDICAL RECORD, 70 Orange Street, Bloomfield, N. J.

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JULY 1942

Medicolegal Notes

Treatment Held Not Secret Within Statute

The New York Court of Appeals, Stammer vs. Board of Regents, 39 N. E. 2d 913, has affirmed the order of the Appellate Division (262 App. Div. 372, 29 N.Y.S. 2d 38) which annulled the determination of the Board suspending for one year a medical practitioner's license for violation of section 1264, subdivision 2(d) of the New York Education Law in that the physician "offered, undertook or agreed to cure or treat disease by a secret method, procedure, treatment or medicine."

There was no evidence that the doctor practised fraud or deceit and that charge was abandoned by the board on its appeal, leaving only the charge, as above stated, under section 1264. The treatment was for a facial cancer, and the main question before the court on appeal was whether the method used was "secret."

The commonly accepted and understood meaning of what is secret, the Court of Appeals said, is "that which is intentionally undisclosed" or, as dictionary definitions put it "Something studiously concealed, a thing kept from general knowledge, what is not or is not to be revealed." When used in a penal law, the courts had decided that the word "secret" meant "studiously concealed". Generally, in law, it is "something intentionally and studiously concealed from those liable to be affected by the act, deed or other thing spoken of."

The treatment in this case was by a salve, the formula for which an unlicensed person had, some years before, disclosed to the physician with directions as to how to use it. It appeared from the testimony that the doctor was familiar with all its ingredients, had tried it on healthy skin before and found no ill results. The ingredients of the salve and the methods of its use were disclosed to the board's committee of grievances on its preliminary investigation. The doctor alone prepared and gave all treatment in the present case, and gave all instructions for the care of the patient, although the salve was prepared for him by its owner. The latter never gave instructions nor participated in the treatment. After some hundred visits, a cure was claimed to have been made. The doctor did not ask or receive any compensation for these visits.

The formula as disclosed by its owner to the doctor and by the latter to the board's committee, was: "Zinc sulphate, five percent; a Chinese spice known as galanga, twenty percent; sanguinaria, fifty percent and lanolin, twenty-five percent."

The court of appeals found that there was no sufficient legal evidence in the case that the physician offered, undertook or agreed to cure or treat the patient by an secret method, procedure, treatment or medicine. There was found nothing secret about the medicine used or the method, treatment or procedure adopted; that, in fact, the evidence was to the exact contrary, and that, by every test set by the Legislature, the doctor had committed no act condemned by the statute for which discipline could be imposed.

The decision was by a court divided five to two. The dissenting opinion was to the effect that the evidence warranted the exercise of the board's discretion, quoting from the case of People ex rel. Bennett vs. Laman, 277 N. Y. 368, 14 N. E. 2d 439, where one trained in a chiropractic school who had "neither spent the required time in study nor received instruction in the prescribed subjects as demanded by this state of an applicant to practice medicine," who gave chiropractic treatment by means of heat, electric lamps, light rays, vibrators, and ointments, was held not entitled to dismissal on motion of a complaint seeking injunction against the practice of medicine by an unlicensed person under the Education Law; "Those seeking medical attention have no means of estimating the skill and ability of the physician, and must depend upon the state to permit only those qualified to engage in that profession." The Laman case was also a five to two decision, no dissenting opinion being offered.

Accidental Injection of Poison Held Through "Accidental Means"

The Ohio Court of Appeals, Mulloff vs. National Accident and Health Ins. Co., 67 Ohio App. 464, 37 N. E. 2d 217, holds that an insured will be deemed to have suffered death "through external, violent and accidental means," within the meaning of an accident and health insurance policy where, instead of an intended nonpoisonous drug, a doctor accidentally injected a poisonous compound into the insured's bloodstream, causing the insured's instantaneous death.